BEEF 'N' BACON

A bimonthly publication from Alberta Agriculture Regional Offices in Barrhead and Red Deer

CANADIANA

JAN 29 1992

"Mamma Likes It So It Must Be Good"

By Bjorn Berg

Learning what to eat would be a difficult process if animals, including man, didn't have several feedback mechanisms. Mother surely is one of the more important: we've all heard her say, 'Don't eat too much of that, it's not good for you'; 'Eat your peas! There are starving people in Africa that could make a meal on what you leave on your plate!'.

Fred Provenza has learned that young herbivores learn what to eat and what to avoid faster from their mothers and each other than they learn on their own. He is concerned that this ability to learn has been largely overlooked in nutritional research. While the science of components needed for growth and reproduction, the approach has also created an artificial barrier to our understanding of what animals will eat or reject.

Provenza feels we have ignored the role of feedback that an animal uses to decide if it prefers a food. We tend to account for tastes, toxins and odors as part of an immediate response to food which limits intake. It's bitter, therefore they don't eat it; or it's sweet, therefore they eat too much. However the feedback concerning a food's value can occur many hours after ingestion, even when the animal is asleep. Intake is either limited or increased in subsequent feeding bouts. And this effect can be extremely long-lasting: the adult animal may limit its intake because of its experiences as a juvenile, or by what it has learned through association with other animals.

Toxins and poisons in plants are interesting because their existence presupposes that animals can detect them in minute amounts, and either have an innate aversion, or will learn to avoid ingestion of them. If the animal has no experience with the plant containing the toxin, it must rely on quick association either by post-ingestive feedback or by observation of the behaviour and response of others in its social group. Survivors invariably learn not to eat the plant.

Can animals determine their own dietary needs and seek foods to fill deficiencies? Provenza suggests that 65 million years of foraging should give them an advantage in ration balancing. But he does not give an unequivocal yes because there is so little research available. If animals can find their solutions to nutritional deficiencies, it is unlikely that the mechanism regulating intake would be simple. And perhaps that's a lesson for human nutritionists as well--a balanced diet is more than one item from each of four food groups.

Provenza, F.D. 1991. Behavior and nutrition are complementary endeavors. In: McCollum, F. T., Editor., Proceedings of the 2nd Grazing Livestock Nutrition Conference, Aug 1-3, Steamboat Springs, CO. Pages 157-169

In This Issue **Vol.7, No.1 December 1991**

Mamma Likes It..... 1
Diet and Health Issues..... 2
Immunity:The Natural Disease Fighter..... 3
Welfare Conference Identifies Issues..... 4
How to Choose an Automatic Air Inlet 5
Calving Barn Ventilation and Heating 6
Beef Industry Targets Animal Welfare 7
Protein Supplementation of Feedlot Cattle..... 8

Alberta AGRICULTURE

SHOUT
SHARE
IT

Diet And Health Issues: Dealing With The Challenges

by Aileen J. Whitmore

Minnesota farmers are talking about diet and health issues. Farm commodities such as beef, pork and dairy products have been criticized in the last decade. That criticism is hard to take because it attacks farm livelihood and traditional rural values. Farmers feel attacked for producing animal products that were universally considered healthy and essential to life.

A study to explore the opinions and attitudes of livestock producers toward dietary fats and cholesterol was conducted by the University of Minnesota extensionists. They interviewed 33 livestock producers from two counties in Minnesota.

Highlights of their findings were:

1. Producers felt their industries had received negative treatment from the media and many health professionals.

2. National and state level media were criticized for "quickly" accepting and focusing on negative information about the meat and dairy industries.

3. Health professionals, and in particular, physicians, were widely criticized for providing mixed messages, lacking consistency and making blanket recommendations without enough attention to individual needs.

4. The local school systems were identified as sometimes conveying negative information about meat and dairy products without adequately emphasizing the positive nutritional factors.

5. Producers felt much of society did not appreciate or understand their industries. Many felt that there was little recognition of the complex management skills required to be a farmer. Shrinking numbers of farmers means that fewer individuals in society have firsthand understanding of food production. This is a serious concern when policy issues influencing agriculture are decided by the general public and their legislative representatives.

6. When producers were asked to describe their own behaviors and feelings, the responses ranged from apathy to moderate concern. Some indicated noticeable changes in their own dietary habits. Reduced fat and cholesterol intakes by the individual or family were usually in response to individual health concerns.

The Minnesota Extension Service offers the following suggestions for planning education programs on nutrition and health:

- Make message easily available to public.
- Communicate with physicians.
- Target youth as an audience.

For the future keep in mind that:

- Agricultural products change over time.
- Current economic realities and federal agricultural policy push and pull farmers, sometimes in different directions.
- Changes toward substantially lower fat products are predicted.
- Knowing if and when to make changes in production techniques may be very important to economic survival.
- Consider specialized markets. Consumers are much more individual in their desires than 10-20 years ago. Specific and unique products may be quite profitable in this environment.

Beef 'n' Bacon is published by Alberta Agriculture offices in Red Deer and Barrhead. More information on all articles is available by contacting your District Agriculture Office or the following:
Regular Contributors:

Red Deer
Robert Borg, Agricultural Engineer 340-5323
Dale ZoBell, Livestock Specialist 340-5335
Marvin Salomons, Swine Specialist 340-5336

Barrhead
Rob Hand, Livestock Specialist 674-8249
Bert Dening, Swine Specialist 674-8247
Wayne Winchell, Agricultural Engineer 674-8254

Edmonton
Aileen Whitmore, Prov. Foods & Nutrition Specialist 427-2412

Contributing Guest Authors
Bjorn Berg, Forage Specialist 853-8109
Dale Engstrom, Head, Nutrition Section 427-6361

Immunity: The Natural Disease Fighter

by Bert Dening

Maximizing immunity in our hogs is really preventative medicine in the sense of keeping the attacking bugs (bacteria, etc.) at low enough levels to prevent a full blown disease. Maximum immunity means less disease, less drug costs, faster growing pigs and in the end more profit for the producer.

What is Immunity?

The body produces antibodies when exposed to a disease. These antibodies travel in the blood stream and attack foreign material trying to establish in the body. The pigs ability to fight a disease depends on past exposure. For example; a pig that has been exposed to bacteria **X** (or something similar) in the past has antibodies that help him fight a new outbreak of bacteria **X** and this pig is immune to that disease. It takes time for antibodies to be produced which means exposure to a new disease can cause severe losses until the antibody (immune) level is built up enough to fight the disease.

Increasing Immunity:

There are two basic ways to increase immunity:

(1) Using a commercial vaccine that is injected or taken orally.

Purchased vaccines are a cost to the operation but this cost has to be weighed against disease risk. Your risk depends on where you live. If there is a hog barn on every quarter around you, of course the risk is high. Where you buy breeding stock also affects risk. If you buy from one source and that source runs a closed herd your risk is reduced. If you buy from multiple sources and the people you buy from buy from multiple sources, your risk of getting a new disease is very high.

Which vaccines you use depends on your situation and the diseases in your area. Talk to your veterinarian about a vaccination program and vaccinate for the most economically detrimental diseases.

(2) Exposure to microorganisms (bacteria, viruses, etc.) already present on the farm.

Farmers can also feed high levels of microorganisms to hogs using scours or sow manure, afterbirth, etc. to increase immunity. This is called feeding back and is often used to build up immunity in gilts.

Piglet Immunity:

Pigs are born with no immunity, therefore no real way to fight disease. Their ability to fight disease comes from the colostrum (mothers first milk) which is absorbed into their system and gives them the ability to fight disease. There are a number of situations that can reduce colostrum intake and make piglets vulnerable to diseases like scours:

1. The last pigs born in a large litter have to compete with brothers and sisters that were often born a few hours previously. This can reduce colostrum intake (because of competition) and the colostrum can already start to deteriorate hours after farrowing starts. Removing the first pigs born in a large for a few hours will reduce competition and gives the last pigs a fighting chance to get a good drink.

2. The smaller the piglet the greater and faster the heat loss. Piglets are inside their mother in a warm environment with no stress. These pigs are born into a much colder and dirtier environment (no matter how good the farrowing barn). Pigs loose heat very quickly which causes chilling, lethargy and invariably reduced colostrum intake.

Heat lamps at the back and on each side of the sow will help to reduce chilling, and increase colostrum intake.

Colostrum intake has a direct affect on the piglets ability to fight disease, not only for the first few weeks of life but it can affect immunity throughout the piglets life for some diseases.

The spectrum of antibodies in colostrum is directly related to the bacteria, viruses, vaccinations, etc. that the mother has been exposed to. For example, gilts have been exposed to less diseases than an older sow so that the immunity passed to the piglets is less from a gilt and gets better as mom gets older. For this reason special care should be taken to maximize immunity in gilts.

Conclusion:

The next issue will talk about increasing immunity in the older pigs and breeding stock.

Remember, the piglets health and ability to fight disease is determined within minutes after birth. Anything that can be done to reduce chilling and increase colostrum intake is extremely critical. These are management factors that you, the producer, have control of.

Welfare Conference Identifies Issues

by Marvin Salomons

Pork producers are in the business of raising food. The methods used to raise pork is of concern to some of the Canadian consuming public. Most of the concerns deal with the treatment of animals, espcially those raised in intensive livestock systems.

There are few people in the public that believe that producers are genuinely concerned about the welfare of their animals. In addition, the average consumer is not aware of the positive steps that have been taken by the pork industry to address animal welfare issues.

A conference held in November, 1991 initiated by the Alberta SPCA brought producers, researchers and other interested people from the poultry, swine, dairy and beef industries together to foster an increased understanding of modern livestock production and animal welfare needs.

One outcome of the conference that is of interest to pork producers are the ideas that were generated in the Pork Commodity Group Workshop. Listed below is a brief summary of those ideas the pork industry felt are important animal welfare issues.

1.TRANSPORTATION

a) Downer pigs and sows are a problem with potential solution being to affect producer financially (ie fines).

b) In-transit losses have been reduced dramatically but there is still a need to educate producers and truckers about the factors that influence losses.

c) Minimal use of electric prods is recommended under the current code but more education is needed.

d) More education for producers and truckers on design and use of loading/unloading facilities and techniques is recommended.

e) More education required in the area of understanding pig behavior.

2. FARROWING CRATES

The farrowing crate appears to be here to stay but is still going through a positive evolution. More education of the public is needed to show crate advantages for baby pig and stockperson.

3. DRY SOW STALLS

Alternatives (ie group housing, electronic feeding) are available but questions remain about their acceptability. The public has definite concerns regarding the lack of sow movement in stalls. The industry would have real problems coping if stalls were "legislated against" tomorrow.

4. CASTRATION

At present the public is not overly concerned about castration of small pigs. Producers would accept an immediate ban providing markets for intact males were made available.

5. TATTOOING

Regarded as benefit to producer (I.D.) and to consumer (residue tracking). More research into electronic methods required.

6. CODES OF PRACTICE

Producers complying with codes should be recognized. Is the consumer willing to pay more for pork raised under codes?

The existing "Code of Practice for the Care and Handling of Pigs" (1984) is being revised. For more information on the new codes contact a swine specialist or any APPDC delegate.

For a copy of the proceedings of this conference contact your swine specialist or the Facility of Extension, U. of A (492-3029).

Check page 7 in this issue of Beef 'n' Bacon for a beef industry viewpoint.

How to Choose an Automatic Air Inlet

by Robert Borg

AIR INLET CONTROL

Typical swine barns have a large difference between winter and summer ventilation rates - up to 20 times! Example: for a feeder barn, winter = 4 cfm/pig, summer = 60 cfm/pig.

The most important part of the ventilation system is the air inlets, they distribute fresh air to all parts of the barn. Ideally, they are automatically controlled.

- Active control: Inlets can be adjusted with motors and microprocessor based controls. (Skov, Fancom systems and others)
- Passive control: Inlets are adjusted by the pressure of air entering the room. (Counter balanced air inlets or spring operated inlets such as Del-Air or Robbco inlets).

INLET PRESSURE

An ideal air inlet will have a constant pressure drop across the inlet as the air flow rate increases. Tests show that the closing force (from a spring or a counter weight) should decrease as the air inlet opens if the air inlet pressure drop is to remain constant. If the force increases as in a typical counterbalanced inlet, the position of the weight will have to be changed between summer and winter.

Rule 1

Pull the air inlet down with your finger. As the air inlet opens, it should require less force to open.

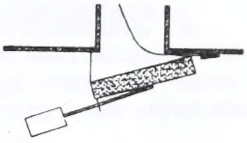
AIR DIRECTION

For an inlet to open properly, the air should blow directly against the baffle. The momentum generated by air making a 90 ° turn creates the force to open the baffle. Side air inlets will not work well because the air is moving parallel to the air inlet.

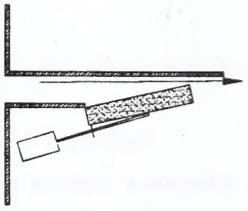
Rule 2

Install the inlet so that the air makes a 90 ° turn coming into the room - don't use side inlets.

- Air turns 90 °
- Force increases with more air flow



- Air doesn't turn 90 ° to generate opening force on inlet.



- Air turns 90 °
- Force decreases as the inlet opens (Robbco inlet)

For further information see the article:

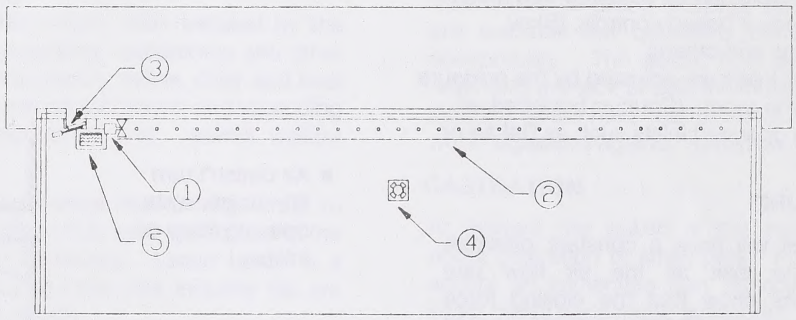
"Analysis of Passively Automatic Air Inlets for Livestock Buildings" in Canadian Agricultural Engineering by Bantle, Barber, and Bayne. July 1991, Vol 33, No. 2.

Calving Barn Ventilation and Heating

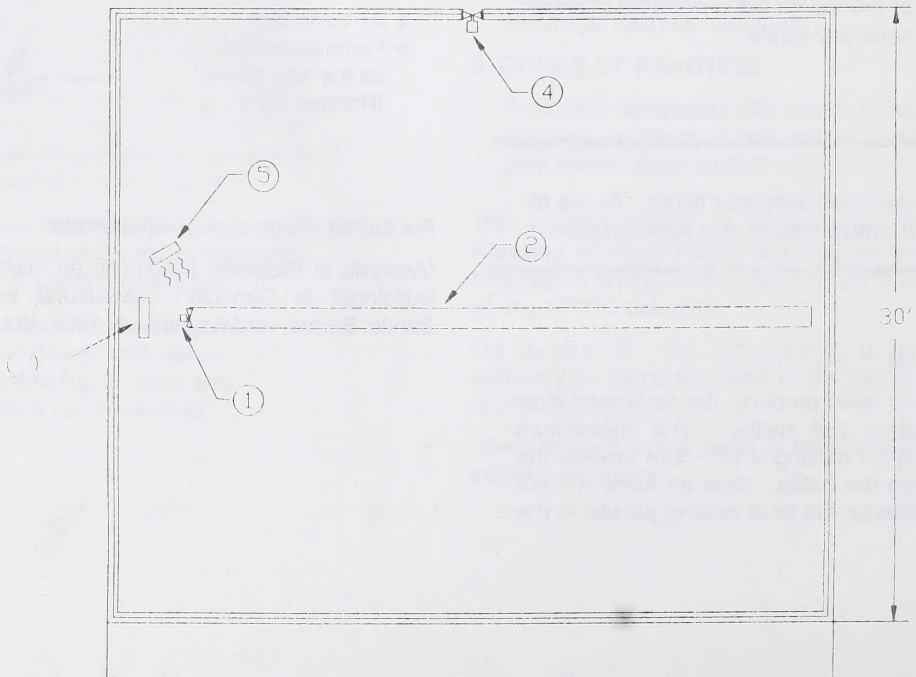
by Wayne Winchell

1. Recirculation fan; 12", single speed (1000 cfm)
2. Recirculation duct; 12"x12"; 2" holes, 12" o.c., both sides
3. Fresh air inlet (6"x24") with counter-balance baffle
4. Small exhaust fan, single speed (approx. 250 cfm)
   (additional fan (500 cfm) may be required if barn is used in warmer weather with doors closed)
5. 2 kw electric heater (if required)

SIDE VIEW



PLAN VIEW



Beef Industry Targets Animal Welfare

by Marvin Salomons

The beef industry like other livestock groups is identifying production practices that should be changed or eliminated. Strong efforts are being made to find good alternatives to poor animal management practices.

For some time voluntary "codes of practices" for the care and management of pigs, poultry, veal calves and fur-bearing animals have existed. The codes are voluntary and were developed by each the concerned industry groups with the assistance of the Canadian Federation of Humane Societies. Recently the Canadian beef industry used the same process to develop a tentative code for the care and handling of beef cattle. Again the code is voluntary and serves as a guideline for the care and handling of all beef cattle from the time of newborn calves up to and including at the processor.

At the same recent animal welfare conference discussed on page 4 of this issue beef producers, researchers, extension and other interested groups got their thinking caps on. In a workshop they generated ideas they felt were important issues relating to animal welfare in the beef industry today and in the future. The following is a brief summary of their report.

1. IS ANIMAL IN GOOD WELFARE

Industry feels there are areas that could be improved.

2. LEGISLATION OF WELFARE ISSUES AND CODES

The beef industry feels the public is generally ignorant of current beef husbandry practices. Industry prefers voluntary codes and peer pressure used to enforce codes.

3. SURGICAL PROCEDURES

Industry needs alternatives to castration, dehorning and branding and would do away with procedures if possible.

4. LATE CASTRATION

Industry feels there should be market forces to change practice of castration of yearlings and bulls.

5. HUSBANDRY PRACTICES

Industry should be more vocal against those who do not look after their cattle. More cooperation with SPCA in cases of abuse, lack of feeding, etc. is required.

6. MARKETING AND TRANSPORTATION

Industry would like to see more electronic marketing out of feedlots and changes in areas of auction markets and trucking where animal stress is high.

7. STRESS ON ANIMALS

Industry feels stress is a major problem (mixing, moving, sorting) especially in feedlots.

8. FEEDLOTS

Although it is improving, feedlot design is area of concern.

9. CALVING OF FIRST-CALF HEIFERS

Industry would like to see in-depth evaluation of this practice.

10. FEEDING INTACT BULLS

There are economic advantages but behavior problems makes this practice impractical.

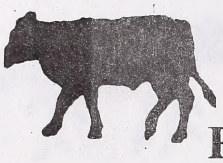
11. SELECTION

High technology should be used to select for more docile, easy to handle animals.

12. OPPORTUNITIES

Opportunities in areas of animal health and stress and improved dialogue in producer-consumer area is needed.

Copies of the proceedings of the 1991 High Technology and Animal Welfare Symposium can be obtained from the Faculty of Extension, University of Alberta, Edmonton, 492- 3029. The codes of practice for the care and handling of beef cattle can be found in Cattleman, 1991; July pp 15-19; August, pp 51-54, and September pp 41-44.



Protein Supplementation of Feedlot Cattle

by Dale Engstrom

Cattle require protein for body maintenance and tissue gain or growth. Symptoms of protein deficiency in feedlot cattle are reduced feed intake, gain and feed efficiency. Modern cattle are genetically capable of gaining faster with a greater proportion of lean tissue then those raised 10-15 years ago. Are current recommendations for protein requirements adequate or would it be profitable to increase the protein content of rations for the lean, growing cattle in the industry?

Four trials conducted at Saskatoon and Brooks were designed to answer these questions. In all trials barley grain and barley silage were the main ingredients with canola meal and canola oil being used as sources of supplemental protein and energy. Exotic crossbred weaned calves and yearlings were used and the growth rates obtained indicated that they were of top quality.

Table 1 shows the amount of improvement from the addition of 2% units protein to the basic diet that contained 11% total protein. The increased daily gain would result in heavier, more valuable cattle at the end of the feeding period. But would the increased value be more than the costs of supplemental protein? To answer this I have obtained current figures for supplement costs and used the research results to calculate the information in Table 2. For calves, providing 2% extra protein (13 vs. 11%) would cost $19.72/head against an increased return of $12.75/head. For yearlings the high protein ration would cost $19.41/head against a return of only $9.35/head.

Most nutritionists use the 1984 Nutrient Requirement of Beef Cattle publication as a guide to the basic animal requirement and add a safety factor to account for variation in feed quality. The results obtained in the research work in Alberta and Saskatchewan support this approach to ration formulation. Increased performance may be obtained with higher levels of protein, but net return is not increased. Using average analysis values for Alberta grown barley and barley silage results in a protein content of over 12% which is higher then the 11% CP currently recommended for finishing cattle diets. As long as your feeds are average or better, it will not pay to provide supplemental protein. This leads us to one final question. Is the protein content of your barley and barley silage average or better?

References used available from the author.

Table 1
Percent Improvement in Performance
Increased Performance

Calves (140 days on feed)	ADG	DMI	F:G
Trial 1	5.7	3.6	0
Trial 2	1.5	2.0	4.2
AVERAGE	3.6	2.8	2.1
Yearlings (105 days on feed)	**ADG**	**DMI**	**F:G**
Trial 3	0.7	1.8	0
Trial 4	4.3	5.2	0
AVERAGE	2.5	3.5	0
Source:	Trials 1, 2 &3	J.J.McKinnon et al.	
	Trial 4	D.F.Engstrom et al.	

Table 2
Example Profit ($/Head) Calculations

Calves: Start Wt =700 lb, 138 days on feed						
Protein (%)	ADG (lb)	Final Wt (lb)	Value of Carcass ($)	Daily DMI (lb)	DM (lb)	Cost of DM ($)
11	2.9	1100	935	17.7	2443	102.09
13	3.01	1115	947.75	18.2	2512	121.81
		+15	$12.75		+69	$19.72
Yearlings: Start Wt + 800 lb, 105 days on feed						
Protein (%)	ADG (lb)	Final Wt (lb)	Value of Carcass ($)	Daily DMI (lb)	DM (lb)	Cost of DM ($)
11	3.67	1185	1007.25	21.8	2289	95.66
13	3.77	1196	1016.60	22.6	2373	115.07
		+11	$9.35		+84	$19.41

S.1.811
c. 2

BEEF 'N BACON

A bimonthly publication from Alberta Agriculture Regional Offices in Barrhead and Red Deer

CANADIANA

MAR - 3 1992

Coyote Predation at Calving Time

By Bob Acorn

As the calving season approaches, farmers should take steps to discourage the presence of coyotes near their cattle. Coyotes are opportunistic predators with an inherent ability to recognize and quickly take advantage of distressed or defenseless animals such as newborn calves, cows in difficult labour and sick or injured livestock. Coyotes rarely attack and kill large, healthy cattle. Of 454 calves under 5 months old killed by coyotes in 1991, 94% were calves less then 2 months old and 85% were less than 1 month old. Only 1% of cattle confirmed killed by coyotes in 1990 were older than 2 years.

Dead livestock makes up the main component of a coyote's winter diet within the farming community. Dead animals should not be left or dragged to the back of the farm. Improper carrion disposal by one landholder can create coyote problems for neighbours. Farmers should quickly and properly dispose of all dead livestock, stillborns, afterbirth and other animal remains.

Under the Livestock Diseases Act, dead animals must be disposed of within 48 hours. The best approach for carcass disposal is to contact a rendering company for pick up. Alternatively, dead livestock can be hauled to a municipal disposal site that allows for carcass disposal. Small carcasses and animal remains can placed in a covered disposal pit and limed.

Landholders and residents with the permission of the landowner, can shoot coyotes on private property. Even if coyotes are not hit, the act of shooting helps frighten them away. Recent changes to the Wildlife Act now permits the use of neck snares to capture coyotes during the fur season under a resident trapping licence. Farmers concerned about nuisance coyotes should use these measures to prevent potential coyote predation.

Cows due to calve should be held in a properly bedded, well fenced, closely supervised quarters. Sick or injured calves and cows should be placed in a secure, protected area as they are more susceptible to predation then normal animals. A lighted calving area also helps discourage coyote predation and makes herd surveillance easier.

If predation occurs, farmers should immediately contact their municipal Agricultural Fieldman for an investigation and assistance. Coyotes normally attack and feed on small calves in the flank area. There will be considerable evidence of bleeding on the ground near the carcass. Leave a suspected kill undisturbed and promptly cover the carcass with a tarp to prevent feeding by coyotes and to protect all evidence until an investigator arrives. An examination of the carcass and death site by an inspector will help prove if coyotes killed the animal or if the animal was already dead before coyotes fed on it. Payment under the Livestock Predator Compensation Program is available for cattle confirmed as killed by coyotes.

In This Issue **Vol.7, No.2 February 1992**

Coyote Predation at Calving Time 1
"Organic"? Natural"? What's in a Name..... 2
Immunity:The Natural Disease Fighter 3
Feed Testing and Quality Control..... 4
Freedom Farrowing Pen 5
Newborn Calf Sled 6
Feeding Growing Heifer Calves 7
Compensatory Gain 8

Alberta
AGRICULTURE

"Organic"? "Natural"? What's in a Name?

by Aileen Whitmore

For most of human history, the challenge was to produce enough food. Often, we did not succeed. Today, thanks to modern agriculture, North American diets are healthier and more varied than ever before. Sometimes, however, the choices can be confusing.

Are "Natural" or "Organic" Foods Better?

All food is "natural". Terms like "organic", "biological" and "ecological" actually refer to a wide range of production methods. The definitions are still being clarified by producers and government regulators. Meanwhile, they can certainly be confusing for consumers.

In fact, many practices promoted as "organic" are already used by most modern farmers. These include crop rotation, interplanting different crops in the same field, and a variety of other techniques to minimize the need for pesticides.

The main difference is that "organic" farmers try to avoid all man-made chemicals. "Natural" pesticides are used to control pests on organic farms. These "natural" pesticides are extracted from plant material rather than being formulated from a petroleum base.

It is misleading, however, to assume that these products are necessarily "safer" than man-made compounds. Ryania, pyrethrin (from the pyrethra plant), rotenone (from the rhododendron plant) and nicotine (from the tobacco plant) are "natural" pesticides but they are classified as "moderately to very toxic" by Agriculture Canada, and must still be regulated and used with care.

Whatever methods are used, strict government controls and monitoring ensure that there are no dangerous residues in food.

Alternative PestControl Methods Are Being Developed

Some hope that much of the damage caused by insects, diseases and weeds may, one day, be prevented using "biological" controls: eg. fungi, bacteria, or other insects. Like the man-made chemicals, these methods must undergo the same rigorous testing for safety, effectiveness and environmental impact. They are available, however, for only very few types of pests.

For now, only a small part of our food can be produced using only "biological" or "organic" methods. Yields, using these methods are substantially reduced which means higher prices for consumers. This is why most farmers use a combination of cultivation techniques, with biological, mechanical and chemical controls.

Are OrganicallyProduced Foods Healthier?

All food produced or sold in Canada is wholesome and safe.

Foods produced by any system must satisfy the same government safety standards. There is no evidence that food produced by any particular production system is healthier. Certainly some people may be willing to pay more for organically grown foods, but they cannot expect greater nutritional value or better flavor.

Beef'n' Bacon is published by Alberta Agriculture offices in Red Deer and Barrhead. More information on all articles is available by contacting your District Agriculture Office or the following:

Regular Conrtributors:

Red Deer
Robert Borg, Agricultural Engineer 340-5323
Dale Zobell, Livestock Specialist 340-5335
Marvin Salomons, Swine Specialist 340-5336

Barrhead
Rob Hand, Livestock Specialist 674-8249
Bert Dening, Swine Specialist 674-8247
Wayne Winchell, Agricultural Engineer 674-8254

Edmonton
Aileen Whitmore, Prov. Foods & Nutrition Specialist 427-2412

Contibuting Guest Authors
Bob Acorn, Problem Wildlife Supervisor 674-8301

Immunity: The Natural Disease Fighter

by Bert Dening

Maximizing immunity in our hogs is really preventative medicine in the sense of keeping the attacking bugs (bacteria, etc.) at low enough levels to prevent a full blown disease. Maximum immunity means less disease, less drug costs, faster growing pigs and in the end more profit for the producer.

The last issue discussed increasing immunity in newborn pigs. This article will deal with immunity in older pigs, sows and gilts.

Gilt and Sow Immunity:

We want to vaccinate and thereby increase immunity in gilts and sows to protect against diseases that will cause abortion or loss of piglets in gestation and to protect newborn piglets through colostrum intake at birth.

In Alberta we are concerned about Porcine Parvovirus and Erysipelas as two diseases causing piglet losses or abortions before farrowing.

After farrowing we are mainly concerned about diseases that cause scours (diarrhea) and possibly respiratory (pneumonia) diseases.

Vaccination:

All sow and gilts should be vaccinated for erysipelas and probably parvovirus. If scours are a problem there are also good vaccines available for your sows and gilts. Gilt litters are more susceptible to scours and routine gilt vaccination to prevent piglet scours works well on many farms.

Feeding Back:

The most effective method of improving overall herd immunity is exposure to organisms on your own farm. Under farm conditions the gilt and sow is immunized naturally by eating feed, bedding or feces (manure) contaminated with the organism. A lot of exposure occurs naturally but can be enhanced by the producer. Deliberately exposing animals to microorganisms to enhance immunity is called feeding back. Feeding back works especially well with organisms causing diarrhea (scours).

Many farms have sows in stalls which limits exposure of sows to manure and therefore reduces immunity. There is also little contact between gilts and sows again reducing immunity in gilts. It's important that gilts have contact with older sows or their manure in order to increase immunity.

Bacteria can change quickly and serotypes of for example E.coli, (a common scour causing bacteria) can change monthly on your farm. For this reason a regular program of exposing sows and gilts to organisms will help reduce disease and improve immunity.

A sow around farrowing sheds a greater concentration of microorganisms in her manure than at any other time. Collecting this manure and feeding it to sow and gilts about a month before farrowing will ensure good immunity in the sow and subsequently the litter when they ingest colostrum. Expect bigger benefits in gilts but it is also justified for sows because it is a low cost approach to immunity and uses your own farms changing organisms. Gilts should also be exposed to manure from farrowing sows about 3-4 weeks before breeding. This will help increases parvovirus immunity and prevent increased stillbirths & mummified piglets as could happen if gilts were exposed only during pregnancy.

Manure from scouring pigs can also be used along with manure from farrowing crates to give high exposure to microorganisms. The intestines of scouring pigs can be drained or diarrhea collected and added to water and sprinkled on the feed of sows and gilts.

CAUTION!

Producers suffering from diseases such as swine dysentery or salmonella should consult a veterinarian before trying feeding back because you could make things worse.

Conclusion

Animals have an immune system as part of their bodies and you as a producer can work with the immune system to help fight disease thus improving health, growth rate, and profitability.

Feed Testing and Quality Control

by Marvin Salomons

A quality control program ensures that every effort is made to provide balanced rations to all pigs. A regular feed testing program is used to check the accuracy and consistency of the feed mixing program. Feed testing serves several purposes:

- It provides information on the nutrient content of ingredients to be used in formulating diets.
- It provides information on the nutrient content of mixed feeds indicating how close this feed is to the requirements.
- It can be used to diagnose problems associated with nutrient deficiencies or excesses in the swine herd.
- It can serve to minimize feed costs and maximize the use of feed resources.
- It can be used to determine the accuracy of the feed mill.

Surveys conducted by Western Canadian agriculture departments indicate that only 20 percent of diets produced on farms are nutritionally adequate. A recent survey of Alberta swine producers indicated fewer than 25% were using some form of feed testing services. Manitoba Agriculture found that 72% of the home-milling equipment was out of calibration for one or more ingredients and that 60% of producers did not know the formula of the diet they were making.

Take Representative Samples

Feed testing is used to test for the variability in nutrient content and the accuracy of the mixing facility. The accuracy of the output or results of analysis hinge on how well the sample of the feed ingredient or mixed feed was taken in the first place. The results will be of little or no value if the sample was not representative of what is actually fed to the pigs.

- To get a representative sample, take at least 20 subsamples from different locations in the storage structure. (If possible, collect your samples when the grain or feed is being augered.)
- Put the subsamples in a pail and mix thoroughly.
- Take a sample from the pail and place in a plastic sample bag. If you are sampling from a storage bin, try to use a storage bin probe to collect your sample.
- Do not dry samples. Recommendations are made on an as-fed basis, so moisture content is important.

Testing the Equipment

Prior to putting a routine feed testing program in place, it is necessary to test the uniformity of the mixing and feed delivery systems to determine how much nutrient levels vary at different points in the system. Collecting samples must be done correctly if the analytical results are to truly reflect the composition.

- Take a probe or grab a sample from 10 different locations in a finished feed mix or at 10 equal time intervals as the feed leaves the mixer. Submit each of the 10 samples separately for analysis.
- To test the mill, take feed samples as close as possible to the discharge point of the mill. Use the same method to test the feed delivery system by sampling along the delivery route or from the feeders.

Typical analysis for uniformity should include tests for crude protein, calcium and phosphorus. Also test for micronutrients, such as zinc or copper, to determine how well supplements are being mixed into the final mix. A ***coefficient of variation*** or ***standard deviation*** for the individual treatments should be determined. A coefficient of variation greater than 10 percent indicates steps should be taken to reduce the variability in the mixing process. The following example shows how this would be done.

Suppose 10 samples of feed were submitted for analysis with the following results for calcium (%):

0.91	0.93	0.88	0.86	0.91
0.87	0.90	0.88	0.92	0.89

$\bar{X} = 0.895\%$

Standard Deviation: $s = 0.0227$

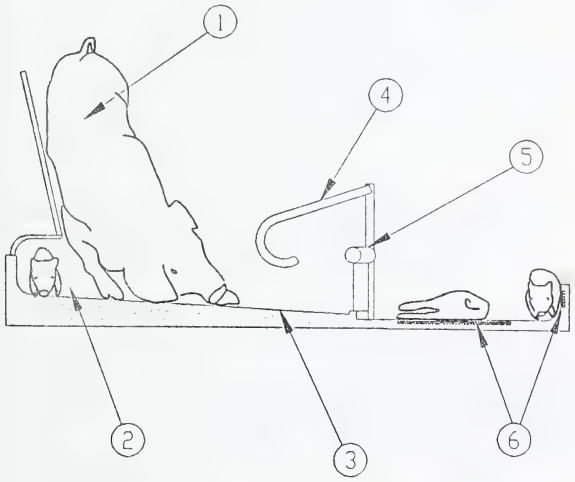
Coefficient of variation (%)

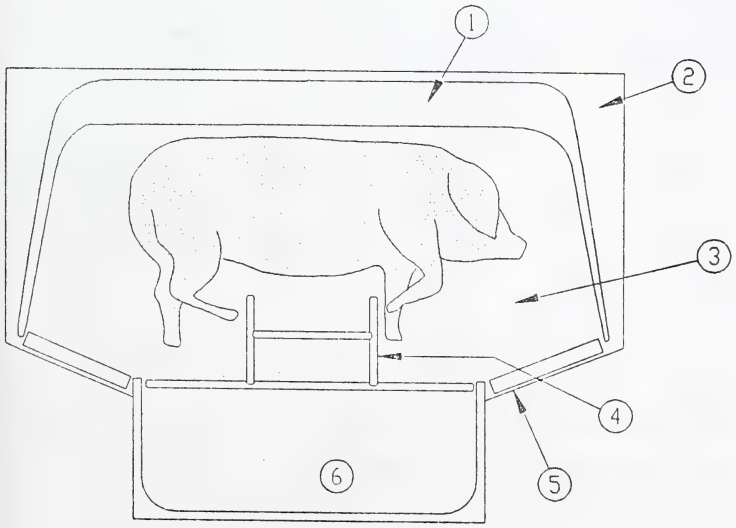
$= 100\ (s)/\bar{x} = 100\ (0.0227)/0.895 = 2.5\%$

How the Freedom Farrowing Pen Gives Sows A Choice

by Robert Borg

A conventional farrowing pen frustrates a sow's natural nest-building behaviour although it has the advantage of protecting the piglets from being trampled. The 'Freedom' pen, developed in Scotland, protects and confines the piglets until weaning and allows the sow to come and go freely - ideal from a welfare and animal behaviour point of view.





1. Sows are too big to lie down comfortably without something to lean against. In the final stage of lying down they find it easier to slide their hindquarters down the wall for support. Sows prefer a sloped wall. In ordinary crates the lying action is uncontrolled, endangering the piglets.

2. The sow-prop wall stops short of the floor to provide a piglet escape area.

3. The straw covered floor (nesting requirements) is sloped to provide drainage and to encourage the sow to lay with her udder facing the creep area. The sow prefers the confined area for farrowing, it gives security and isolation.

4. Bars to prevent a sow from blocking the creep entrance.

5. A 16" step with a roller on the top will confine piglets to the pen but will allow sows to leave.

Nesting sows are very active, on average travelling 30 km in this phase. Sows can do this in an area 16 feet square, impossible in a regular crate!

Sows start to lie outside the pen after 7 to 14 days, returning to the pen to suckle the piglets. As pigiets grow they increase their demand for milk and get more persistant in trying to stimulate milk let-down.

6. Roll-over creep heating system. Piglets use their nose and mouth to search out a warm soft area - the sow's udder.

Piglets may not be particularly interested in a warm floor under a heat lamp. A high intensity heating element cast into the creep wall at snout height along with good lighting will attract piglets into the creep area. If piglets become too hot lying against the warm wall they can roll over and lay on the floor which is heated by a lower intensity heating element.

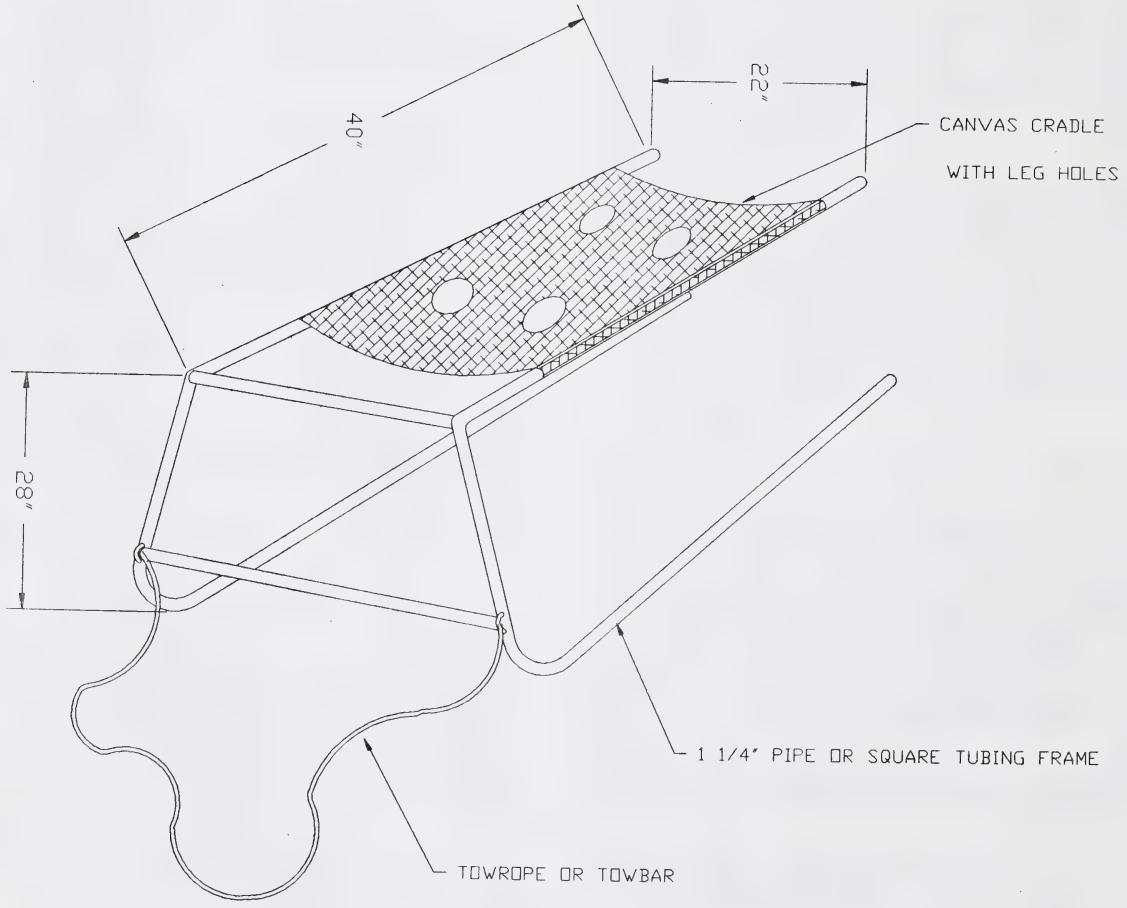
Reference: "The Freedom Farrowing System", M.R. Baxter, Farm Building Progress, No. 104, April, 1991.

Newborn Calf Sled

by Wayne Winchell

Here's another idea for transporting new born calves that provides good visibility for the mother and keeps the operator at a safe distance. The canvas should be 32" to 36" long and the leg holes spaced for the average sized calf.

Source: Bill Lee, Camp Creek



Feeding Growing Heifer Calves
Forage - Based Rations

by Dale ZoBell

Cow/calf producers are forever trying to be as efficient as possible in order to increase income. Because feed is the single greatest operating expense incurred then this is one area where efficiency can pay great dividends. Heifer management, particularly as it relates to nutrition and feeds, is an ongoing concern. What rations to feed, how much and will they meet target size in time for breeding.

At the Agriculture Canada Melfort Station researchers have been looking at various feeding alternatives for growing heifers taking into account growth and feed efficiency, or the amount of feed required for a given weight gain.

Performance of growing heifer calves on several rations formulated to equalize rate of gain is shown below. Since optimum rate of gain will differ with the breed of cattle, feeders should always watch cattle closely and adjust the ration accordingly, to either increase or reduce rate of gain.

It is important that balanced rations be fed providing adequate levels of not only energy and protn but also minerals and Vit ADE.

From this data, it is evident that there is no one way to grow heifers. However, the decision should be based on economics and the type of feeding you are set up for and accustomed to. Heifers should have a targeted weight gain but not pushed too hard, allowing for maximum growth so that they will successfully calve as two year olds.

We have been fortunate this past year as most regions of Alberta have adequate and relatively inexpensive feed on hand. We have also experienced a mild winter to date providing producers optimum growing conditions for their heifers.

The rations shown here are just examples and can be used as a guide. If you desire ration recommendations tailored for your farm and feeding program contact your feed company or your nearest Alberta Agriculture district or regional office.

	Brome/Alfalfa hay & grain	Barley Silage & straw & grain	Sweet clover silage & straw & grain	Complete ground ration
Average initial weight (lb)	534	522	529	529
Average final weight (lb)	800	794	794	794
Average daily gain (lb)	1.57	1.57	1.56	1.56
Average daily feed (lb)*	18.7	16.5	17.4	19.8
forage	15.9	12.1	11.4	.75
straw	0	1.3	2.1	12.1
grain	2.7	2.9	3.75	4.8
canola meal	0	0	0	1.85
Feed: gain ratio	12.0	10.4	11.3	12.9

* 90% dry matter basis, includes mineral, Vit A & antibiotic supplements.

Compensatory Gain

by Robert Hand

Compensatory gain is the fast efficient growth that occurs after a period of food restriction. For people it could be compared with the difficulty of keeping weight off once a diet has ended. In cattle, compensatory growth most commonly occurs when yearlings are turned into a lush vegetative pasture.

Compensatory gain can sometimes be used as a management tool to enhance profitability. **Why feed for gain when gain is expensive when cheaper more efficient gain is possible on spring pasture.** But beware, the compensatory growth occurring after periods of food restriction may not be sufficient to fully recover the lost growth or economics might dictate that faster growth has the potential for greater profits and increased market flexibility.

Calves restricted during the winter will experience compensatory growth the following summer. Calves need to gain 1.25 lb/day or yearlings 0.9 lb/day just to maintain the same body condition. Daily growth below these levels would indicate that body condition is being reduced. It is generally considered that for every one pound increase in growth during the winter, summer growth is reduced from 0.2 to 0.9 pounds. The average reduction appears to be 0.7 pounds. This large variability in compensatory growth indicates that there are many factors involved. These factors include:

- **Animal Age.** Food restrictions during the first six months of life are generally irreversible. Younger calves do not recover that lost growth whether the restriction is 10% or 80%.

- **Nutrient Restricted.** A protein restriction is more harmful than an energy restriction, especially for calves under 6 months of age.

- **Severity of the Restriction.** Compensatory gain is proportional to the previous restriction level. Those restricted 30% in winter gain faster on pasture than those restricted 10%.

- **Weight.** Heavier animals (>700 lb) at the beginning of winter gain less the subsequent summer. A feeding program promoting faster gains is more suitable for heavier animals.

- **Animal frame size and sex.** Steers can grow 0.25 lb/day faster than heifers and crossbred large framed calves can grow 0.25 to 0.5 lb/day faster than small framed calves without affecting subsequent growth. The optimum winter gain for early maturing breeds may be 1.3 to 1.7 lb/day and 1.7 to 2.0 lb/day for late maturing breeds.

- **Animal Health.** Healthier animals always do better, with or without a food restriction.

- **Ratio of Winter to Summer Period.** It is the total period gain that counts and not just the winter or summer periods separately. Declines in summer gain with heavier winter feeding is more than offset by the greater total winter gain; that is, ending pasture weight is heavier if fed for heavier winter gains. This is partially due to the longer winter vs summer period.

- **Pasture Availability.** Previously restricted calves have a 5 to 10% greater feed intake than unrestricted calves after the restricted period is over even though they are lighter.

- **Length of Compensatory period.** It can take from 15 to 30 days after pasture turnout for higher conditioned calves to reach their pre-turnout weight. The loss is due to changes rumen microflora and gut fill but does not involve any real change in weight. Gains during the first 70 days on abundant pasture could be greater than 2.8 lb/day for those previously restricted. Thereafter differences between previously restricted and unrestricted narrow and remain similar.

Incorporating these factors into your management program will require that you consider cattle cost, the genetic potential for gain, the compensatory gain achievable on pasture or in the feedlot, the cost of winter feeds and pasture, interest rate and the price slide between heavy and light animals.

The most profitable rate of winter feeding for pasture cattle is not necessarily where cost of gain is the cheapest. One must also consider cattle price. Partial budgets suggest a higher rate of return for cattle backgrounded at 1.6 to 2.0 lb/day in winter when feed costs are low and cattle prices are high. If feed costs are high and cattle prices are low, feed for 1.2 to 1.6 lb/day winter gain. The best returns may be in those operations which have allowed for flexibility.

BEEF 'N' BACON

A bimonthly publication from Alberta Agriculture Regional Offices in Barrhead and Red Deer

PANAMHASA
APR 22 1992

New Land Use Regulations for the Hog Industry?

By Brian West

Agreement has been obtained by Alberta Agriculture, Alberta Environment, Alberta Municipal Affairs and Department of Health for an Alternative approach to dealing with the planning approval of new and expanding intensive livestock operations. The overall initiative is to develop a workable solution to the intensive livestock issue which addresses both environmental as well as nuisance/ health concerns and that of the public at large. This will involve the shifting of jurisdictions, repealing some legislation and the amending of others. The major changes in jurisdiction are as follows:

1. Siting-will be transferred from Division 23 of health regulations to the Department of Municipal Affairs under the Planning Act. Under the municipal planning system, development permits, based on siting and management standards, would be mandatory for all new intensive livestock operations.

2. Conflict Resolution-A Provincial Farm Practices Board would be set up under the authority of the Agricultural Operations Practices Act. This board would be established to resolve conflicts involving new and existing operations through changes to livestock management practices.

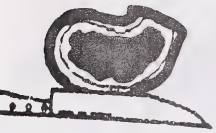
Implementation is the responsibility of the Intensive Livestock Operations Committee. This committee consists of the above four government departments, plus representation from all the major livestock commodity organizations in the province. This committee has two major tasks. The first is to write a new manure management Code of Practice. This will provide the basis for assessing new developments. The second task is to develop an effective development approval process for rural municipalities. It has always been the responsibility of the local municipalities to facilitate planning approval of rural developments. Under the new approach, local planning approval will be more rigorous but at the same time will hopefully have the support of the industry. The Code of Practice will provide minimum standards for manure management as well as assist in determining what is generally accepted practice in instances of conflict.

Although industry and legislators are now focused in the same direction, implementing such a program will be a challenge. The new Code of Practice will bring manure management practices under scrutiny. Such practices include manure storage, winter spreading, odour nuisance, manure application rates, and siting setbacks.

In This Issue **Vol.7, No.3 April 1992**

New Beef Grades Measure Lean Yield 2
Of Mice and Disease..... 3
Reducing Feed Cost Has a Big Impact..... 4
Paired Circular Farrowing Crates 5
Structural Strengths of Various Types of Fence 6
Protein Supplementation of Yearlings on Pasture ... 7
Strive for Fertility First 8
District Comments (Optional)..... 9

Alberta
AGRICULTURE



New Beef Grades Measure Lean Yield

by Aileen Whitmore

Canada's new grading revisions come into place April 5th. For beef buyers, the changes add three descriptions:

- Eating quality in terms of marbling;
- More accurate lean meat yield;
- Boxes and carcasses imported or traded interprovincially will have to be identified as graded or ungraded.

This means buyers can specify the quality and yield of beef they want.

To give a more accurate measurement of the lean meat yield on the carcass, **a measurement of the width and length of the rib-eye muscle will be added** to the present back fat measurement.

Agriculture Canada graders will use a special ruler to make the measurements. The measurements are compared to a grid printed on the ruler to establish the % lean meat yield.

Research shows this is 7%-8% more accurate in determining cutability, or lean meat yield, than the old back fat measurements. It calculates edible meat without fat or bone.

Yield figures are based on the research work of **Dr. Steve Morgan-Jones** on 450 carcasses. In further research, the ruler's accuracy was tested on 1,600 carcasses.

Producers selling directly to the packer can request their grading certificate to get a description of the exact yield and marbling grade.

For retailers ordering from the packers, 3 new classes of lean meat yield will be roller branded on the carcass.

A1, A2 and A3 will be the terms used. These were the old designations for back fat. In future, A1 will refer to carcasses yielding 59% or greater lean meat yield; A2 will have 54%-58% lean meat yield; and an A3 lean meat yield will be less than 54%.

When ordering from the packer, retailers and restaurant buyers can specify the quality marbling grade, Canada A, AA or AAA; or, they can get a box with a mix of these different quality grades which would be labelled "Canada Grade A/AA/AAA".

Beef imported, exported or shipped interprovincially will have to be labelled as to grade or, if the product is not graded, be marked "ungraded". This means most of the beef going into major retail chains will have a grade or an "ungraded" stamp.

This is an opportunity for retailers to identify country of origin and grade to their consumers. In research studies, consumers told B.I.C. that they prefer to buy Canadian.

Source: Beef Information Centre Report, March 1992

Beef'n' Bacon is published by Alberta Agriculture offices in Red Deer and Barrhead. More information on all articles is available by contacting your District Agriculture Office or the following;

Regular Conrtributors:

Red Deer
Robert Borg, Agricultural Engineer 340-5323
Dale Zobell, Livestock Specialist 340-5335
Marvin Salomons, Swine Specialist 340-5336

Barrhead
Rob Hand, Livestock Specialist 674-8249
Bert Dening, Swine Specialist 674-8247
Wayne Winchell, Agricultural Engineer 674-8254

Edmonton
Aileen Whitmore, Prov. Foods & Nutrition Specialist 427-2412

Contibuting Guest Authors
Btrian West, Waste Management Specialist 340-7607

Of Mice and Disease

by Bert Dening

With today's interest in disease free herds and maximizing profits, it is important to include rodent control in your disease and total farm management program.

Table 1 shows diseases that can be transmitted by rats or mice. Some of these are not present in Alberta and of course we do not have rats. But we do have mice, and diseases such as erysipelas and swine dysentary are present on many operations.

Table 1:

Disease of Swine Known to be Transmitted by Rodents:

Disease	Agent	Rodents
Atrophic Rhinitis	Bacteria	Rats
Leptospirosis	Bacteria	Rats, Mice
Pseudorabies	Virus	Rats, Mice
Rabies	Virus	Rats, Mice
Salmonellosis	Bacteria	Rats, Mice
Swine Dysentery	Bacteria	Rats, Mice
Swine Erysipelas	Bacteria	Rats, Mice
Toxoplasmosis	Protozoan	Rats, Mice
Trichinosis	Nematode	Rats

Rodent Control

Buying healthy stock, an active vaccination program and a successful rodent control program are major factors in controlling disease on your farm.

In comparison to other pests, rodents are very intelligent, evasive, mobile and persistent. Therefore, control has to be more than just putting out mice bait once in a while.

Sanitation

Mice need food, shelter and water the same as all animals. Effective rodent control starts with clean barns both inside and outside. Regularly cleaning up spilled feed inside and outside around bins, sweeping alleys and hallways all helps reduce the amount of feed for mice. Covering self feeders not only helps in controlling mice it also helps in dust control.

Junk, such as old lumber, feed bags, old equipment, tall grass and weeds are all good shelters for mice. Cleaning up your barns and yard helps in mice control and also makes for a better and safer work environment.

Rodent Proof Construction

Long term rodent control is only possible if mouse proof buildings are built. Once mice get into walls and attics control becomes very difficult.

All Ventilation openings, roof vents, auger openings, etc. should be screened. Make sure all bin doors and lids, plus barn doors seal tightly. All augers, pipes, etc., entering buildings should be fitted with a collar to prevent mice climbing up and in. Canada Plan - Service Plan #M-9451 called "Rodent and Bird Control in Farm Buildings" gives more detail on this topic. Your local Ag. Engineer, Swine Specialist or D.A. can be contacted for a copy or more information.

Poison Baits

The third line of defence against rodents is the use of poison baits. Baits should be placed in areas where rodents travel. Poison baits should be placed where pigs or people cannot access them. Many farmers take children into barns with them so be careful where you place poison.

Conclusion

Rodents can transmit disease, and even though mice generally do not travel far they still can be a threat. Disease can be very costly so rodent control by being clean, building right and using poisons is one other means of reducing risk and increasing potential profit.

Reducing Feed Cost Has a Big Impact

by Marvin Salomons

Producers should always be looking at ways of reducing costs of production. Feed costs typically represent 60 percent of the cost of producing a pig. The distribution of feed costs in a pig operation is shown below.

Distribution of Feed Costs	
Grower-Finishers	65%
Starters	20%
Sows	12%
Creep	3%
TOTAL	**100%**

Steps to reduce the costs of production invariably involve reducing feed costs or improving production associated with feed useage. Methods that must be considered target improvements in feed useage to achieve better growth rates, improved feed intakes and feed conversion efficiencies, or even lean tissue deposition rates. The use of higher quality feed ingredients combined with better methods of feed formulation have the potential of improving pig performance such as days to market or carcass index as well as reducing feed costs.

WHAT IS THE POTENTIAL RETURN?

If a computerized model pig unit is set up it is easy to determine what changes in pig performance for feed costs have on overall profitability. Assume an example model 200 sow farrow to finish operation with the following identified major parameters.

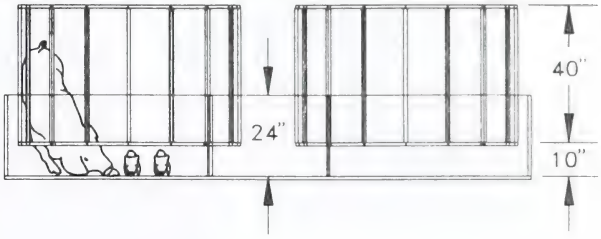
ASSUMPTIONS:	FEED COSTS:
200 sows	$160/tonne nursing diet
3,741 pigs sold/year	$150/tonne dry diet
175 days to market	$155/tonne grower diet
105 carcass index	$145/tonne finisher diet
3.1 grower-finisher FCE	
$1.32/kg market price	

Parameter	Feed cost/pig sold	Operating cost/pig sold	Return/pig sold	Net Margin (total)	Net Margin/ pig sold
Model base	$60.39	$95.15	$111.98	$27,262.00	$7.29
5 days less	$58.71	$93.37	$111.98	$33,771.00	$9.03
0.1 better FCE	$59.12	$93.81	$111.98	$32,077.00	$8.57
1.0 better grade	$60.39	$95.09	$113.05	$31,461.00	$8.41
REDUCING FEED COSTS:					
Grower $5/tonne	$59.85	$94.58	$111.98	$29,429.00	$7.87
Finisher $5/tonne	$59.61	$94.33	$111.98	$30,383.00	$8.12
Grower-Finisher $5/tonne	$59.07	$93.76	$111.98	$32,551.00	$8.70
Gr.-Fin.-Sow $5/tonne	$58.69	$93.36	$111.98	$34,046.00	$9.10
Gr.-Fin.-Sow $20/tonne	$53.61	$88.02	$111.98	$54,400.00	$14.54

Paired Circular Farrowing Crates

by Robert Borg

Conventional farrowing crates closely confine the sow to avoid crushing the piglets but they may not meet a sow's behavioral requirements. Circular crates, evaluated in a University of Guelph study, are more comfortable and give the sow more room!



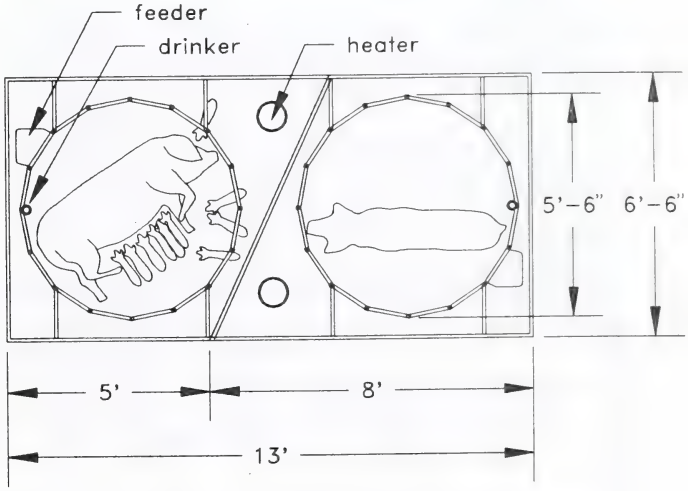
Conventional Crates

- Sows rub against narrow crates which can cause abrasions and swelling.
- Sows "fall to the floor" as they can't control body movement when lying down.
- Piglets can be squeezed against side bars.
- Side bars restrict access to teats during nursing.

Sow Posture

Sows spend the same amount of time standing in conventional and circular crates. The difference is in the lying position. Lateral resting, which is more comfortable and relaxed is more frequent in circular crates. Sows use a sternal resting position more often in a conventional crate for several reasons:

- in a restricted space it is easier to move and change position rapidly to avoid crushing piglets.
- in a limited space it is very hard to get up from a lateral position, it takes more effort.
- if the sow has abrasions from rubbing on the bars of a conventional crate, the sternal position helps her to avoid contact with the crate.



The circular crate also helps the sow by providing a wall to support her hindquarters in the final stage of lying down.

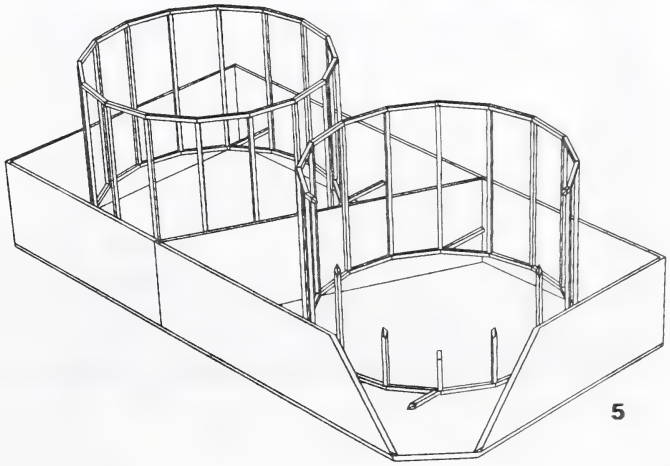
Turning

The circular crate allows the sow to turn frequently. Only 20% of the turns are in response to the piglets. The sows preferred to face the corners of the pens most of the time.

Piglets

Sleeping and nursing times are similar in both types of crate, however the piglets spend more time playing in the circular crates.

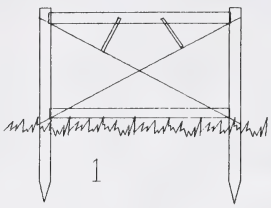
Reference: *Paired circular crates - an ideal alternative for farrowing, Z. Lou, and F. Hurnik, University of Guelph, Pigs, Nov/dec, 1991.*

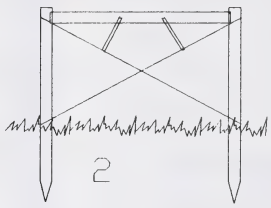


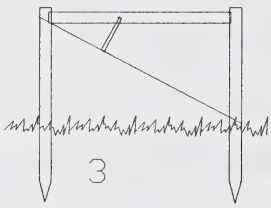
Structural Strengths of Various Types of Fence Brace

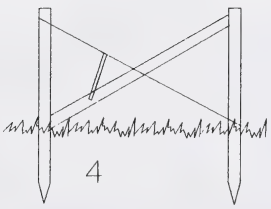
by Wayne Winchell

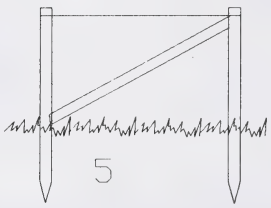
There are various methods of constructing brace assemblies. Strengths are affected by post sizes, post spacing and depths in the ground as well as the soil type and soil moisture. The following brace assemblies were tested (pull from right to left). Five inch top posts were used and driven 30 inches into a loam soil. Post spacing was 8 feet. Single brace as well as double brace assemblies were tested.

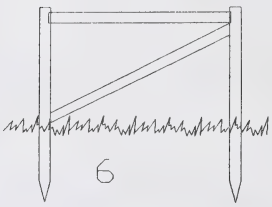












Strength Of Brace Assemblies At Failure

	Single Braces		Double Braces	
Brace Type	Deflection at 1500 lbs	Load at Failure	Deflection at 1500 lbs	Load at Failure
1	.60 in.	3600 lb.	.33 in.	6000 lb.
2	.77 in.	3200 lb.	.48 in.	5550 lb.
3	1.14 in.	2900 lb.	.49 in.	5550 lb.
4	.13 in.	5600 lb.	.13 in.	6000 lb.
5	.33 in.	3900 lb.	.14 in.	4100 lb.
6	.17 in.	3200 lb.	.09 in.	6000 lb.

Protein Supplementation of Yearlings on Pasture

by Dale ZoBell

Grass cattle put out in late spring to forage for themselves is an age old practice. By utilizing the best of what mother nature has to offer most often results in healthy and growthy cattle. This is the high point or peaking of nature as grasses provide the necessary nutrients in amounts that easily meet most animals needs.

As the summer appears and wears on, the grasses quickly mature, store root reserves and if not grazed adequately, go to seed. Fiber content increases, the plant becomes more indigestible and protein levels begin to fall. In nature this is usually not a problem as most wildlife, dependent on the grasses and shrubs for sustenance, now have replenished fat and body stores as they prepare for harder days. For the cattleman this often means less gain for his yearlings and suckling calves as nutrient levels and availability fall.

Figures 1 and 2 illustrate this point. This is U.S. data gathered from the western plains but relates also to Alberta conditions. In our situation, it may occur one month later than illustrated but nutrient levels do fall to the same degree.

From management perspective, in order to utilize forages to their potential, overgrazing cannot occur and grass management must be maintained.

At the same time, producers want to maximize production without deleteriously affecting future grazing.

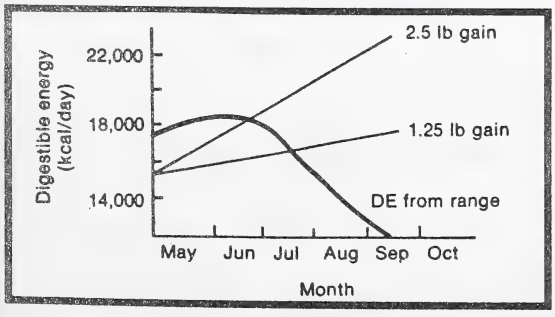


Figure 1: Digestible Energy (DE) required for maintenance plus 1.25 and 2.5 pounds of daily gain for a 550-pound yearling steer and the amount available from range forage.

One method to accomplish this is through supplementation of a high protein creep feed during the summer, particularly during the latter months of grazing such as August or September.

In a trial conducted during the summer of 1991 in eastern Alberta, yearling heifers were hand fed two pounds of Cansoy (50% canola meal, 50% soybean meal) every other day. Over the 118 day grazing period, protein fed yearlings gained .51 lbs/day more than the control group who did not receive any supplemental protein. Cost of the supplement was $.17/lb. with average consumption of 1.32 lbs/head/day. The net benefit was $22/heifer.

This trial showed that the limiting nutrient was protein for maximum production. Protein availability from the forage had decreased to the point that optimal gains were not possible. The greatest amount of gain came from mid to late July on.

Research in the U.S. has demonstrated similar results. Gains are extremely efficient with a small amount of high protein supplement. It is suggested that these supplements be fed starting in mid July until cattle come home. Feed at a rate equivalent to one pound/head/day. Monitor pasture conditions as this program works only when adequate grass is available. If grazing steers, be sure they are implanted.

This program can result in higher gains, greater net returns and improved pasture utilization and management. For further information contact the author.

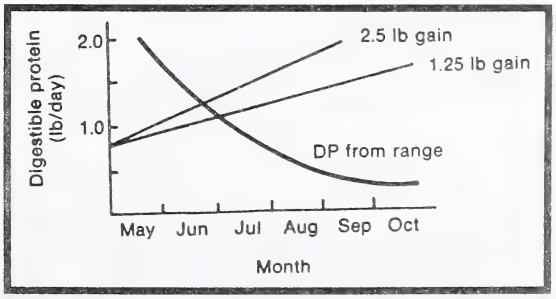


Figure 2: Digestible Protein (DP) required for maintenance plus 1.25 and 2.5 pounds of daily gain for a 550-pound yearling steer and the amount available from range forage.

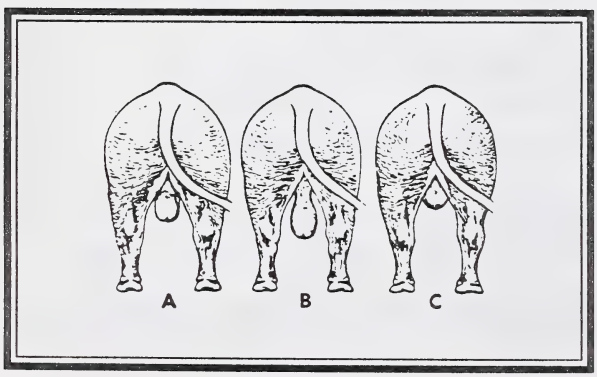
Strive For Fertility First

by Robert Hand

We tend to assume that bulls are always fertile, otherwise why call them bulls. But research suggests that from 20 to 40% of beef bulls are reproductively deficient in some manner. It may be a lack of libido, deformed sperm, a low sperm count or an inablity to mount due to laminitis. The bulls purpose in any herd is to get cows bred.

Glenn Coulter from the Agriculture Canada Research Station in Lethbridge offers the following checklist for buying and using bulls. Utilizing his checklist can enhance bull performance and result in a higher percentage of cows giving birth and weaning a calf.

- Buy bulls from reputable breeders or bull sales where bulls have been examined for breeding soundness by professionals experienced in bull evaluation.
- Examine the records of the sire and dam of bulls being considered for purchase as to their fertility and growth performance of their progeny.
- Buy bulls with growth performance data, selecting those above average, ie. those with indexes over 100.
- Buy bulls that exceed the minimum standards recommended for scrotal circumference, preferably bulls that are at least average for breed and age.
- Buy bulls with a scrotum having a distinct neck, rather than straight-sided or wedge-shaped. A distinct neck (B) permits adequate temperature compensation. A staight-sided neck (A) of the scrotum is generally the result of fat deposits that may impair proper thermoregulation. Wedge-shaped scrotums (C) have usually undersized testes. This is of particular importance in two-year-old or older bulls.



- If buying British breed bulls, buy those having less than 5 mm backfat as yearlings and less than 10 mm backfat as two years of age or older. Since Continental breeds tend to deposit fat more internally than British breeds buy Continental or crossbred bulls with the least backfat.
- Buy bulls with sound feet and legs that travel well. Bulls must be able to cover many miles of rough terrain.
- Buy bulls with clear, bright eyes, an indicator of good health.
- Buy useful bulls, not necessarily those that look fancy or have done well in a show.
- Check seminal quality of all bulls before each and every breeding season.
- Maintain bull batteries having bulls of similar age and weight. This decreases the chance of young bulls being injured.
- Mix bulls to be used in a breeding group two or three weeks before the breeding season begins so their social dominance order is established before breeding starts.
- Monitor bulls during the breeding season to ensure they have the desire (libido and serving capacity) and ability (free from anatomical defects and injuries) to breed females. Observe for mounting and ensure that the bull penetrates and ejaculates.

Table 2.. Minimum scrotal circumference in centimeters

Age (months)	Breed			
	Simmental	Angus Charolais Maine Anjou	Hereford Shorthorn	Limoisin Blonde d'Aquitaine
12-14	33	32	31	30
15-20	35	34	33	32
21-30	36	35	34	33
>30	37	36	35	34

BEEF 'N BACON

A bimonthly publication from Alberta Agriculture Regional Offices in Barrhead and Red Deer

Rangeland Conservation Pays

by Barry W. Adams

When we talk rangeland, we have to remember that we are dealing with native plant communities and that a different set of management practices and principles will apply when compared to crop land. Gains for the livestock producer and the environment come by manipulating a complex native ecosystem, be it woodland range at Lac La Biche or short grass prairie in the dry south-east.

In our work with livestock producers, we see many opportunities for improving the long-term viability of livestock enterprises. The carrying capacity of many crown grazing leases can often be improved or made more reliable through the application of some very basic management. One of the most common problems is the reliance on season long continuous grazing, where cattle are allowed to graze ***too much and too often*** from favoured plants and areas in a pasture. Management is critical to strike a balance between the range resource and forage needs to produce red meat.

The management practices that are effective in raising the condition and productivity of native range seem to have an archaic ring to them. But, when their effects are viewed over a period of years with a monitoring program that is sensitive to plant species and vigor shifts, their true value becomes clear. The key range management practices are as follows:

- balance livestock forage demand with what the resource can supply and leave adequate residue or carryover to protect plants and soil,
- strive for uniform grazing use through livestock distribution tools such as salting, watering sites, fence layout and other tools,
- use adapted seeded pastures, seeded annuals or rotation schemes to minimize the negative effects of the early grazing period,
- provide periods of rest and recovery to pastures after grazing.

These measures are practiced by a planned grazing system to achieve resource and production goals.

But how do these range management practices benefit the livestock producer and the resource? Gains are made as the right management regime serves to stimulate or advance ***plant succession.*** Simply stated, when range has become overgrazed, management will encourage a shift back to a more advanced plant population that is more productive and desirable for livestock grazing. The benefit will be a higher sustainable carrying capacity and more beef per acre, on a sustained yield basis.

Other benefits include extra grazing as stock harvest forage from areas that were previously unused. Extra litter or carryover will conserve moisture and make production more stable during dry spells. Critics of rotational grazing often fail to look at the total landscape and the environmental costs of continuous grazing. A very significant environmental spinoff will be the rejuvenation and protection of **riparian areas**, the vegetaged zones associated with drainages, creeks and wetlands that wildlife and livestock benefit from.

In This Issue

Beyond Beef is Beyond Belief 2
Summer Blues 3
How Safe Are Your Pigs 4
Lying Area for Sows 5
Crowding Alley and Working Chute 6
Misinformation 7
Chelated Trace Minerals Not For All Herds 8
District Comments(optional) 9

Vol.7, No.4 June 1992

Alberta
AGRICULTURE

"BEYOND BEEF" By Jeremy Rifkin is Beyond Belief

by Aileen Whitmore

This book by Jeremy Rifkin condemns the cattle industry from almost every standpoint. The following claims: depletion of the rain forest, hunger, cancer and heart disease are only three from a long list.

Rifkin is American and so his arguments are about the U.S. situation, however, in most instances, the same arguments could be used in Canada. It behooves agriculture producers to be prepared to answer his misinformation.

Claim: Western beef consumption is responsible for depletion of the rain forests.

Truth: The most important factors in rainforest destruction have been local government attempts to raise foreign exchange earnings, debt problems and rapid population growth. Rifkin advocates "peasant farming," and those kinds of agriculture systems are responsible for ten times the level of deforestation.

Exports of Central American fresh or frozen beef to Canada account for less than three percent of beef consumed annually in Canada. In other words, **a connection between forest land in Central America and the consumption of beef in Canada does not exist.**

Claim: Western beef consumption is responsible for world hunger.

Truth: Even factoring in the grain fed to livestock, about 85 percent of the nutrients that cattle consume cannot be eaten by humans. In addition to the roughage and grain they consume on the range and in feedlots, cattle eat many by-products of the food industry, thereby assisting with waste disposal.

Furthermore, most world hunger experts agree that **the major impediments to feeding starving people are poverty and faulty distribution systems.**

Claim: Western beef consumption is responsible for cancer and heart disease.

Truth: Experts agree that beef is a part of a healthy diet. The current food guide for use in Canada from Health and Welfare Canada suggest that Canadians eat 2 servings of cooked lean meat, fish, poultry or alternates every day. The food guide suggests a serving size of 60 to 90 g (2-3 ounces). A serving of beef would l ook illike the size of a deck of cards.

Lean beef is an important source of essential nutrients like iron, protein, zinc and B vitamin including B12 which cannot be obtained from plants.

Beef'n' Bacon is published by Alberta Agriculture offices in Red Deer and Barrhead. More information on all articles is available by contacting your District Agriculture Office or the following:

Regular Conrtributors:

Red Deer
Robert Borg, Agricultural Engineer 340-5323
Dale Zobell, Livestock Specialist 340-5335
Marvin Salomons, Swine Specialist 340-5336

Barrhead
Rob Hand, Livestock Specialist 674-8249
Bert Dening, Swine Specialist 674-8247
Wayne Winchell, Agricultural Engineer 674-8254

Edmonton
Aileen Whitmore, Prov. Foods & Nutrition Specialist 427-2412

Contibuting Guest Authors
Barry Adams, Regional Range Manager 381-5486

Summer Blues

by Bert Dening

Regardless of year to year fluctuations in market price there are also seasonal fluctuations within any given year. **High Profit Pigs** are born in November, December, January and February every year.

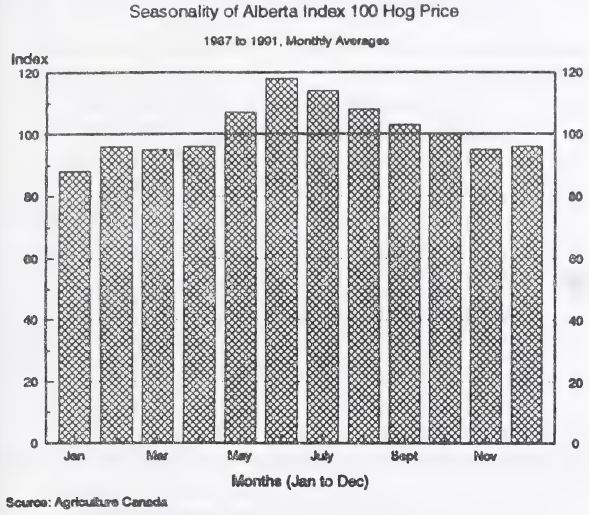


Figure 1: Shows the seasonality of the Alberta hog price from 1987 to 1991. You can see that hogs shipped from May to August are worth 10 - 15% more than the average yearly price.

In order to take advantage of these higher returns you have to start planning one year in advance. This is because sows bred in mid-July will farrow early November and those offspring will be sold in May (depending on growth rate).

A Normal Situation

The typical scenario on most farms is exactly the opposite of what should take place to take advantage of higher summer prices.

Because of longer days and hot weather, most records show a farrowing rate problem from summer breedings. It's also a lot harder to get gilts pregnant in the summer. This is even worse in outside sow herds but also affects inside herds. This means less successful breedings in the summer, empty crates in November, December and January and less pigs to sell at higher prices.

What to do:

A number of things can be done to better this situation.

1. At the least you want to maximize the use of your farrowing crates in November to February and stick to your normal routine.
2. You can also consider over farrowing from November to February by turning your crates over one or two times more. This would involve putting in sows just before they are due (not a week before), possibly shortening weaning time by a few days and generally running things tighter. (Remember most of you have more time at this time of year).

This would mean extra pigs would need to be finished some where else in order to prevent over crowding in the spring and summer. Outside facilities can be utilized on many farms for use from April to August to sell extra high profit pigs from May to August. These facilities could also be used to breed extra animals for farrowing from November to February.

How to do it:

In order to prevent the farrowing slump in November to February, here are a few suggestions.

1. Over breed from July to October so your crates are full from November to February.
2. Use drip coolers in your farrowing barns so that appetite stays up which will help increase conception rate and weaning to service interval after weaning.
3. Consider the use of AI as one of your breedings in the summer. The heat can sometimes make boars less interested in breeding and at the worst can cause infertility.
4. Consider the use of a product such as PG600 so you are assured of sows and gilts coming into heat when you want.
5. Above all keep good records so that you know what happens to conception in the summer and to litters born from November to February then you know what you really should do.

Conclusion

Take advantage of our yearly seasonal price fluctuations by gearing your operation to farrow extra pigs from November to February so you have extra **High Profit** pigs to sell in the summer.

How Safe Are Your Pigs?

by Marvin Salomons

"Biosecurity" is the latest buzzword used in pig production Biosecurity refers to the precautions you take to reduce the risk of introducing disease into your pig operation.

Your Herd's Current Health Status

The health status of the pigs you originally established in your operation is the main factor determining your herd's current status. Other factors such as your management procedures and how you bring new genetic material into the herd also play a key role.

Simplistically, four types of health categories exist:

1. DISEASE-FREE - Pigs that are derived by caesarian section and raised in a sterile environment.

2. SPECIFIC PATHOGEN-FREE (SPF) - Pigs are derived by caesarian section and free of enzootic pneumonia, lice and mange and do not show clinical signs of atrophic rhinitis or swine dysentry.

3. MINIMAL DISEASE (MD) - In Alberta, MD pigs are virtually free of signs of atrophic rhinitis, enzootic pneumonia and haemophilus pneumonia.

4. CONVENTIONAL HEALTH - Pigs may or may not show visible signs of atrophic rhinitis, however, almost always show post-mortem evidence of subclinical atrophic rhinitis, internal snout damage and mycoplasma pneumonia.

Not everyone has the management expertise required to maintain the high health status of SPF or MD herds. Conventional health producers are willing to accept a higher risk of disease as a trade-off for not having to cope with strict isolation and disease prevention techniques. If managed properly all categories of health can be run profitably.

Potential Sources of Disease Entry

In any operation entry of disease can occur from outside by various ways:

- **PIG TO PIG CONTACT** - Any pig of unknown health status is a potential disease carrier (nose to nose, urine, manure, shared air space)
- **PROXIMITY TO OTHER PIGS** - Next to introducing outsider pigs this is the second biggest risk factor. **Table 1** shows distances some diseases can travel.
- **OTHER ANIMALS, INSECTS & BIRDS** - Mice, cats and dogs can spread disease directly or track manure. Fecal droppings from wild birds can be a source. Flies carry a host of bacteria viruses and parasites and have been found to travel up to 2.5 km between farms.
- **TRUCKS AND EQUIPMENT** - Trucks carrying pigs passing within 50 m of your farm can pose a risk. Dirty loading ramps and trucks are a risk.
- **BARN WORKERS AND VISITORS** - People that work with pigs daily pose a greater risk than those with only occasional contact. Take steps to prevent cross-contamination by providing clean boots, coveralls, and filter masks or even showers.
- **FEED AND WATER** - Dugouts, creeks and open ponds can harbor disease-causing organisms like *leptospira spp.* Feed can be a source of bacterial contamination like *salmonella spp.*

TABLE 1 Risk of Disease Spread As It Relates to Proximity of Other Herds

Disease	Minimum Distance (metres)
Aujesky's Disease	500
Actinobacillus Pleuropneumonia	500
Atrophic Rhinitis	300
Swine Dysentery	300
Transmissible Gastroenteritis	400
Enzootic Pneumonia	150
Mange	100
Streptococcal Meningitis	300

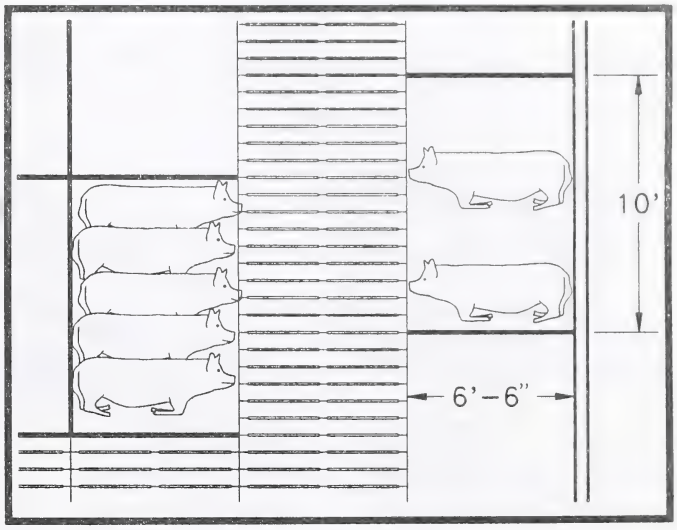
Muirhead, 1988

Adapted from: Pork Production Course, 1992, Chapter 10.

Lying Area for Sows Housed on Partially Slatted Floors

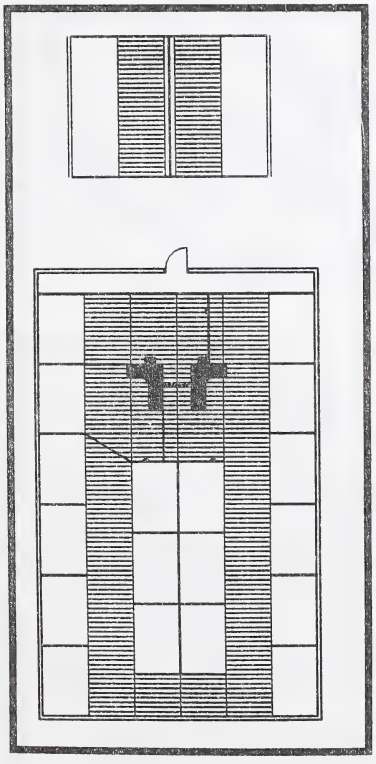
by Robert Borg

An alternative to housing gestating sows in individual crates is to use large pens housing groups of sows. The drawings show two layouts - one with pens holding 10 to 12 sows on liquid feeding, the other showing a layout for groups of 40 to 50 sows using electronic sow feeders. Both layouts have about 50% solid and 50% slatted floors.



Lying Behavior

If the solid lying area has a depth equal to the length of a sow, the sows natural behaviour is to observe the group by lying side by side with their hindquarters towards the wall and their faces towards the middle of the pen. In the large pens with electronic sow feeders the lying areas are divided into sections with dividers every 10 feet. These sections, in effect, divide the pigs into smaller groups.



Space Requirements

The latest Danish recommendations are:

- Groups of 10 to 12 sows fed as a group; allow 2.0 to 2.5 m^2/sow for up to 10 sows, allow 1.8 to 2.0 m^2/sow for more than 10 sows.
- Electronic sow feeding in large groups, typically 40 sows; allow 2.3 m^2/sow for continuous production and 2.0 m^2/sow for batch production.

One square metre (m^2), equals 10.76 square feet (ft^2)

Crowding Alley and Working Chute

by Wayne Winchell

Here's another idea for a set of handling corrals from Saskatchewan. Dimensioned plans can be obtained from the Barrhead Regional Office or from your local D.A. Office.

Saskatchewan Agriculture and Food

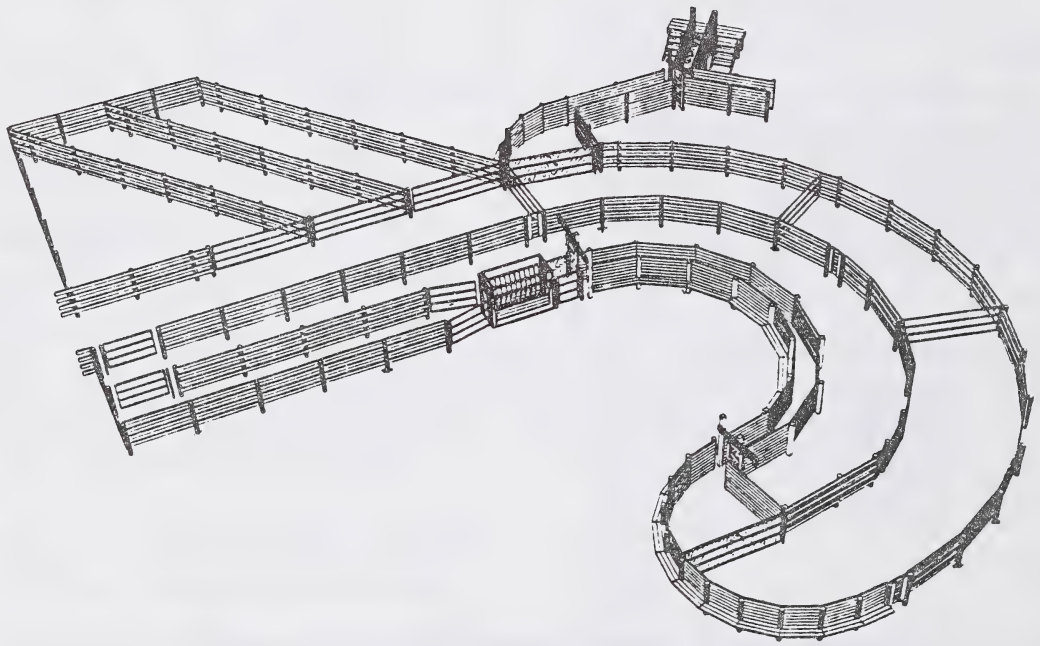
Agricultural Engineering Branch

Saskatchewan Rural Development

Extension Service

Plan S-187

Semi-Circular Crowding Alley and Working Chute



This plan shows a semi-circular crowding alley and working chute designed to handle large numbers of cattle. Cattle are run into the crowding alley and presorted back into diagonal pens adjacent to the lead-up alley. Size the sorting pens to accomodate as many animals as desired.

Cattle are moved to the chute from the lead-up alley and/or from the sorting pens. The crowding alley will accomodate 70 mature animals. One person can easily crowd animals towards the working chute.

A solid sided crowding tub and self-locking crowding gate allow animals to be efficiently manoeuvred into the working chute. The curved working chute has solid sides to improve animal movement. This layout allows one person to work a relatively large number of animals within a small area. The semi-circular design saves steps since the squeeze is close to both the crowding alley and crowding tub

Blocking gates, one way gates and man gates are placed as required.

The loading chute may be located at any position along the crowding alley.

All dimensions are approximate and must be adjusted to fit specific site restrictions.

Locate the facility in a well drained area accessible to all animal confinement areas and to trucks in all weather.

Misinformation

by Dale ZoBell

All of us at one time or another has either seen, heard or been confronted by those from outside the beef industry who make negative statements that are the result of misinformation or ignorance.

It is very easy to jump in with both barrels blazing and give them a piece of your mind. Short term that appeases yourself, but long term it is not the thing to do. The Canadian Cattlemen's Association have provided the following list of actions producers can do to ensure misinformation does not go far.

1. Contact Your Provincial Cattle Association or the Canadian Cattlemen's Association

Let them know what's being said by whom. Your cattle association has access to a variety of resource people in both the agriculture and the scientific communities who can help producers respond to inaccurate and misleading information.

- be sure you know what your children are being taught in school
- monitor attitudes and activities in your local papers, bank newsletters, church bulletins, etc.

2. Respond to Misinformation

Who better to explain agriculture than someone who makes their living producing food.

- ask your cattle association to send the scientific facts to help you respond to the misinformation.
- write a letter to the editor to correct inaccurate stories
- call in to talk shows to give people the facts about agriculture

3. Long Term Proactive Action

- become active in your provincial cattle association
- tell your friends and relatives what the real story is
- offer to write a column for your local paper
- volunteer to participate in your provincial Ag in the Classroom program
- volunteer to speak to local service groups
- take out memberships in organizations such as environmental and conservation associations, humane societies, fish and game associations, etc.

For more information contact Canadian Cattleman's Association, 215 6715 8th St. N.E. CALGARY, T2E 7H7

Producer Responsibility

Producers have to keep in mind that most consumers know very little about modern agriculture production methods. We have a responsibility to provide that information to the consumer.

- Consumers have a safe, wholesome, nutritious secure food supply.
- Consumers can be confident that beef is produced in an environmentally sustainable way.
- Producers provide a safe, nutritious and economical product to consumers.
- Canadian cattle producers are committed to safe, responsible, environmentally sustainable production systems. It's only common sense. Why would we damage the resources that provide us with our livelihood?
- The farming community accepts its responsibility towards the environment. We make our living by using natural resources wisely and in a sustainable renewable way.

Consumer Responsibility

Consumers also have a responsibility to make sure they have correct information on how their food is produced.

If consumers have a question about cattle production encourage them to contact the provincial cattle association, the provincial Beef Information Centre or the provincial agriculture department.

Suggest to consumers that they critically evaluate environmental information they receive. They can subject it to:

The Environmental Acid Test

1. Is the information based on fact or opinion?

2. Is the source of the information an experienced and well-respected professional in the subject being discussed?

3. Does the story appeal to your emotions so that your decision is based on fear or sympathy instead of facts?

4. Have you heard the whole story or are some of the details missing?

5. Will the source of the information benefit financially or otherwise from the story?

Chelated Trace Minerals Not For All Herds

by Robert Hand

Chelation is the holding of a metal atom, trace mineral in this case, between two atoms of a single molecule. Visualize a crab pinching a trace mineral with both claws. The claws represent an amino acid or other chelating agent.

Two examples fundamental to plant and animal life are chlorophyll a and hemin. Chlorophyll a is the green plant pigment which acts as a catalyst for photosynthesis and hemin enables hemoglobin to carry oxygen from the lungs to the tissues. So chelation is nothing new to plant and animal metabolism. In the case of trace minerals, chelated trace minerals occur naturally in blood and feeds rather than as free ions or inorganic salts. Many trace minerals are chelated in the intestine prior to absorbtion.

The chelate cattlemen would be most familiar with is organic iodine or EDDI or Hiboot(TM) which has long been added to salt for the prevention of footrot. Other chelates and their comparable common forms are listed in the following table:

Chelates	Common Form (Inorganic)
zinc methionine	zinc oxide (ZnO) zinc sulphate ($ZnSO_4$)
copper proteinate copper lysine	copper sulphate ($CuSO_4$) cupric oxide (CuO)
manganese methionine	manganese sulphate ($MnSO_4$) manganese oxide (MnO)
selenomethionine	sodium selenite (Na_2SeO_3)
cobalt glucoheptonate	cobalt carbonate ($CoCO_3$)
iron methionine	iron oxide (FeO)

The feed industry has predominantly used inorganic salts to supplement trace minerals in livestock diets. Recent research indicates that the bioavailability of trace minerals is enhanced when the chelated form of the trace mineral is used rather than the inorganic salt form. Unfortunately, chelated trace minerals are costly. The price of a mineral supplement triples even if only half the trace minerals come from chelates. **So is it worth it?**

Of the chelated elements listed, only copper, zinc and manganese are of concern to Alberta producers since we have no problem with the others except selenium. Chelated selenium is not allowed in supplements. Therefore, selenium, cobalt, and iron need not be considered further. The literature indicates the following:

- Zinc absorbtion from zinc methionine or zinc oxide appears similar but the two sources are metabolized differently after absorption. Chelated copper or manganese are also metabolized differently than their inorganic salts. But the mode of action is not known.
- Zinc methionine improved gain by 8.1%, feed conversion by 7.3%, carcass quality, and the immune response when ruminants were fed similar zinc levels from either zinc methionine or zinc oxide.
- Increases in calf weaning weights have been inconclusive when chelated zinc and manganese were fed at 2/3 chelate and 1/3 oxide forms.
- Lactating dairy cows had lower somatic cell counts and higher milk yields when fed zinc methionine than from zinc oxide.
- Antibody titers against IBR were higher after vaccination for stressed zinc methionine fed steers than control or zinc oxide steers.
- Copper proteinate was less affected by high molybdenum indicating that in high molybdenum areas, cattle performance could be enhanced with the use of copper proteinate.
- Manganese methionine improved heifer's gain in one experiment but not in a second.

The above information indicates that chelated trace minerals could be beneficial, but more information is required before spending extra dollars to supply trace minerals. The differences in absorption alone cannot justify the added cost since it would be cheaper to feed higher levels of the inorganic salts and get a similar response as the chelated products. But we do not understand the mode of action sufficiently to know when chelates should replace inorganic salts in the diet. Some physiological processes such as the immune response could be limited by use of inorganic salts.

In assessing whether to use chelated minerals in your herd, consider firstly **is there a problem?, is it a mineral related problem?, have you tried the conventional methods of solving the problem?, are you sure its a mineral problem?, and have you discussed the problem with a nutritionist or veterinarian.** The cost of using chelated minerals cannot be presently justified on a continual basis for commercial cattle. Most nutritionists would consider using chelates only after trying to solve the problem using traditional mineral supplements.

BEEF 'N BACON

A bimonthly publication from Alberta Agriculture Regional Offices in Barrhead and Red Deer

CANADIANA

AUG 21 1992

Drought Effects on Pasture & Hay

By Ken Lopetinsky

In some areas, the 1992 drought has reduced forage growth on pasture and hay fields to the lowest levels on record. Understanding how drought affects forage plants and animals can help in getting through the drought without destroying perennial forage fields.

Over-grazing is the greatest danger to perennial pastures. Severe continuous grazing not only eliminates top growth during drought but also destroys the root system. Regrowth after rain will be slow and delayed until the root system has a chance to recover. This process can take a year or more before a healthy root and top growth system is re-established.

To help fields subjected to over-grazing, three management tips can be used.

- The best is **to 'rest' the pasture** - removal of all livestock until regrowth is a minimum of 4 inches.
- The second is **to reduce the number of cattle on pasture** before over-grazing occurs.
- The third is to **supplement hay** on pasture by moving livestock to a smaller sacrifice area with water. This will cause over-grazing on a small portion of the field rather than over-grazing the entire pasture.

Use of hay fields for grazing will allow the rest time needed for permanent pastures. A minimum of 4-6 inches of regrowth is necessary and over-grazing will cause the same damage to the root systems. If the hay fields have a greater than 25 percent legume content, deferr grazing these fields until mid-September. Carbohydrate root reserves must build up in August for better winter survival of legumes - especially alfalfa.

Some consideration can be given to seeding early harvested grain fields to fall rye by mid-August. Unless sufficient moisture is available, fall production and grazing potential may be limited. Over-grazing of the rye this fall may lead to severe winter kill and poorer performance in early spring. The greatest advantage to having fall rye will be spring grazing. This will allow time for over-grazed perennial pastures to recover from the drought prior to later spring grazing.

Please remember that perennials can be destroyed by over-grazing and the cost of re-establishment and the loss of production will be substantial. Drought proof your pastures now.

In This Issue

Vol.7, No.5 August 1992

International Trade Will Affect Us All 2
Evening Weaning...The Best 3
Sex and th Young Boar 4
A New Idea For Dust Control 5
Hay Tarp Tie-Down Weights 6
How To Make More Money With Cattle 7
Late Summer Drought Options 8
District Comments (Optional) 9

Alberta
AGRICULTURE

International Trade Will Affect Us All

by Aileen Whitmore

In a world where there are no trade boundaries, foods flow between nations and consumers benefit through greater choice at more competitive prices. Trading partners work together to establish international food safety standards and consumers are confident in the safety and quality of foods they purchase.

If world leaders agree on the current proposal to revise the General Agreement on Tariffs and Trade (GATT), this vision of world trade will move one step closer to becoming reality.

What Is GATT?

The GATT is a multinational agreement adopted in 1947 to promote international trade. Prompted by years of trade wars and a worldwide economic slowdown, the GATT was developed to establish cooperative trade rules and expand trading opportunities.

In general, the agreement encouraged trade between its 103 member countries by prohibiting most trade restrictions, except tariffs. Additionally, GATT members grant each other "most-favored nation" and "national" trading status, meaning that laws, taxes and other charges affecting imports or exports must be applied equally to all members; they may not be used to discriminate against imported products to protect a domestic industry from imports.

The GATT periodically undergoes "rounds" of negotiations to update or modify its policies. The current and eighth round known as the Uraguay Round, has the most complex agenda yet, ranging from tariffs to copyrights. It also represents the first significant effort to fully integrate agricultural trade into the GATT.

Food Safety Harmonization

When the Uraguay Round opened in September 1986, several agricultural trade issues were earmarked for discussion, including the use of health-related standards to unfairly restrict imports of food and agricultural products. While the current agreement recognized the right of member countries to adopt measures deemed necessary to protect health, the rules are vague and allow the possibility of using health standards as non-tariff trade barriers.

For example, in 1989 the European Community (EC) banned the import of beef raised with synthetic growth hormones, allegedly based on safety questions of such substances. But according to the Director, Multilateral Trade Policy Affairs Division of the U.S. Foreign Agricultural Service, the ban had the effect of restricting the import of beef, rather than protecting the health of Europeans. When one looks at the scientific analysis of the situation, science is clear that these growth promotants are safe. A popular interpretation of the situation was that the EC didn't want to import beef and found the hormone issue an effective way to keep it out.

The Uraguay Round proposal would strive to eliminate such practices by encouraging the harmonization of national sanitary and phytosanitary standards to protect human, animal and plant life or health. The proposal covers all measures taken by countries to ensure the safety of food such as regulations governing pesticides, as well as safeguards against exotic pests or diseases.

Terms of International Trade

Sanitary & Phytosanitary Standards - government standards designed to protect human, animal and plant life or health

Tariffs - taxes on imports or exports assessed by individual governments to generate revenue or protect domestic industries from competition.

Non-tariff Trade Barriers - restrictions on imports unfairly imposed by governments to limit another country's access to its markets.

Food Safety Harmonization - a long-term process wherein national sanitary and phytosanitary standards become increasingly similar as countries base their measures on sound science.

Beef'n' Bacon is published by Alberta Agriculture offices in Red Deer and Barrhead. More information on all articles is available by contacting your District Agriculture Office or the following:

Regular Conrtributors:

Red Deer
Robert Borg, Agricultural Engineer 340-5323
Dale Zobell, Livestock Specialist 340-5335
Marvin Salomons, Swine Specialist 340-5336

Barrhead
Rob Hand, Livestock Specialist 674-8249
Bert Dening, Swine Specialist 674-8247
Wayne Winchell, Agricultural Engineer 674-8254

Edmonton
Aileen Whitmore, Prov. Foods & Nutrition Specialist 427-2412

Contibuting Guest Authors
Ken Lopetinsky, Forages & Special Crops Specialist 674-8260

Evening Weaning...The Best

by Bert Dening

Whether pigs are weaned in the morning or the evening had a significant effect on growth rate and performance to 28 days after weaning.

Trial:

An experiment was conducted at Virginia Polytechnic Institute and State University to assess whether weaning time had an effect on performance.

Two trials, involving 176 weanling pigs, were conducted at two different times. Pigs were either weaned at 8:00 pm or left with their mother and weaned at 8:00 am the next morning.

Results:

Figure 1 shows the results in average daily feed intake and average daily gain comparing 8:00 pm or 8:00 am weaning.

Pigs weaned in the evening consistently ate more than pigs weaned in the morning. 18 days after weaning, the pigs weaned in the evening had eaten 5% more feed.

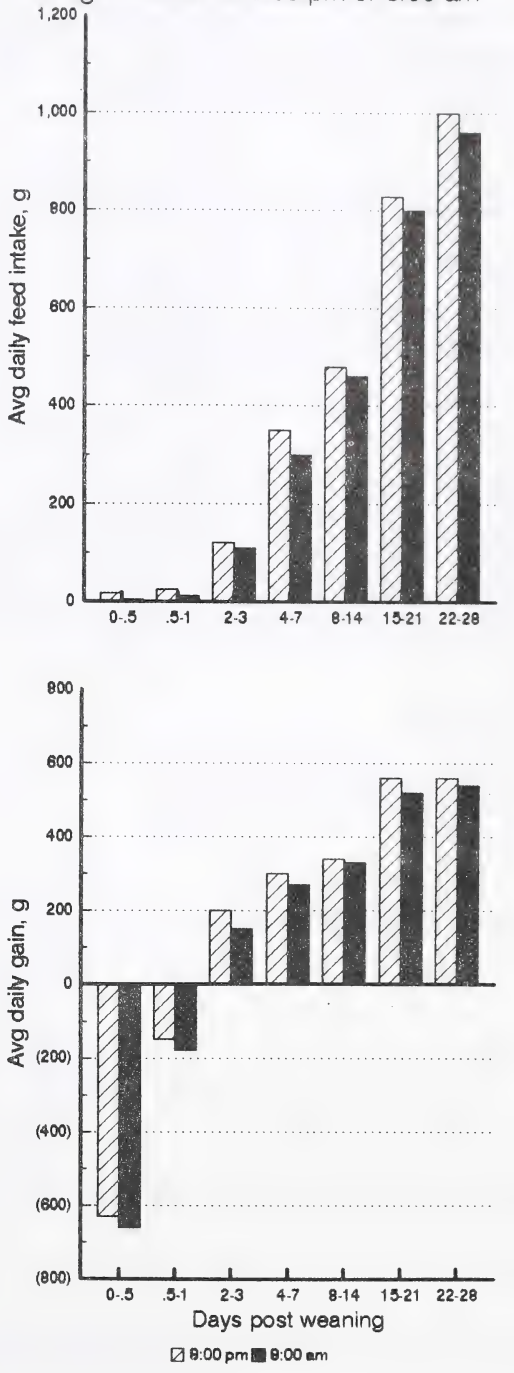
Weight loss was observed in both evening and morning weaned pigs during the first day after weaning but the average weight loss was less in the pigs weaned in the evening. Over the 28 day experiment Average Daily Gain was 6% greater for pigs weaned in the evening. Feed conversions were not influenced by weaning time.

Implications:

These results showed that weaning pigs in the evening compared with the morning enhances feed intake and growth rate and reduced variability of gain. This improved the poor postweaning performance usually observed.

This is something that might be worth a try on your farm to save a few dollars and increase profits.

Average Daily Feed Intake and Daily Gain of Pigs Weaned at 8:00 pm or 8:00 am



Sex and the Young Boar

by Bert Dening

How soon can you start using a new boar? Most people start using and relying on a new boar too soon. So how soon can you start using a new boar?

One breeding company did a large 3 year study involving 5,000 single boar matings over a 3 year period. The results of this computer study can be seen in table 1.

When looking at farrowing rate it did not really plateau but kept on improving up to the 21 months considered in this study. The farrowing rate achieved by boars of up to 9 months of age is unacceptably low. Some of this could of course be a gilt effect because young boars tend to be used on gilts. Remember that an increase in the farrowing rate of 10% would give an extra production of 250 pigs born alive per year for a 100 sow unit with 2.4 litters per sow per year.

When looking at pigs born alive, boars under 12 months produced significantly fewer pigs and a plateau is reached at about 16 months. The difference in pigs born alive between boars under 12 months and boars older than 12 months is worth .8 live pigs per litter. This would produce an extra 192 pigs per year on a 100 sow unit with 2.4 litters per sow per year.

General Guidelines

1. Very young boars (less than 10 months old) should only be used once every week. All services should be covered (2nd breeding) by a mature, proven boar.
2. Young boars between 10 and 12 months old should have a minimum of seven days and a maximum of 14 days between services. These boars can work without cover especially if finding out whether a boar is a total dud.
3. Boars over 12 months old should have a minimum of 4 days and a maximum of 14 days between services. It was noticed in this study that the performance of all boars (despite age) tended to decline rapidly if the interval between services exceeded 14 days.
4. The number of boars on your operation should at least equal the number of sows to be bred each week.
5. All breedings should be done with 2 different boars as much as possible. For example boar A on Monday morning and boar B on Tuesday morning. The only exception might be a month of single boar matings at 10 months of age to find out if he is a total Dud.

Conclusion:

It's critical to nurse young boars along gently and not sap their strength and stamina but don't overly restrict their sexual activity.

Remember that a good boar is half your herd but a bad boar is all of it.

Table 1 Results of British boar study

Age of boar (mths)	6	7	8	9	10	12	14	16	18	20	21
Farrowing rate (%)	56	71	72	70	80	82	82	84	86	84	94
Pigs born alive	10.03	10.75	10.90	10.93	10.90	11.06	11.46	11.64	11.85	11.61	11.41
Index	5.62	7.66	7.87	7.65	8.68	9.04	9.42	9.77	10.25	9.76	10.73

A New Idea for Dust Control

by Robert Borg

Respirable dust in a pig barn is a health hazard for farm workers. In fact working in a pig barn may be equivalent to smoking 10 cigarettes per day! Any method to reduce the amount of dust that workers are exposed to will benefit their health.

The sources of dust in a pig pen could be dried manure, feed, insects, skin flakes..... We still don't know all the origins of dust. We do know that dust levels vary directly with animal activity and that by the time the dust is in the air it is probably too late to do anything about it.

British researchers are looking at pig feeds as the potential source of most of the dust. Danish researchers on the other hand are looking at ways to stabilize the dust on surfaces in the barn and prevent it from being carried into the air. The Danes tested a system that sprayed the entire room twice per day with an emulsion of water and Canola oil. Air quality was checked by measuring workers lung capacities.

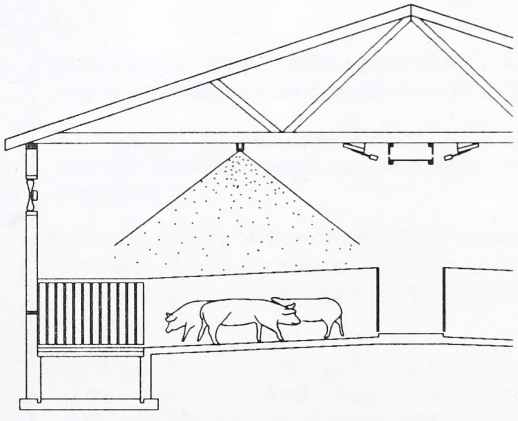
Respirable Dust Reduction After Oil Spray

weaner room	78%
grower room	55%
finisher room	55%

Oil Spray Specifications

- Emulsion of 10% Canola oil ,90% water
- Large droplets sprayed over all surfaces
- Spray twice per day, early morning and mid afternoon
- Use 2-5 mL oil per pig per day

A commercial version of this system is under development by Funki AS in Denmark.



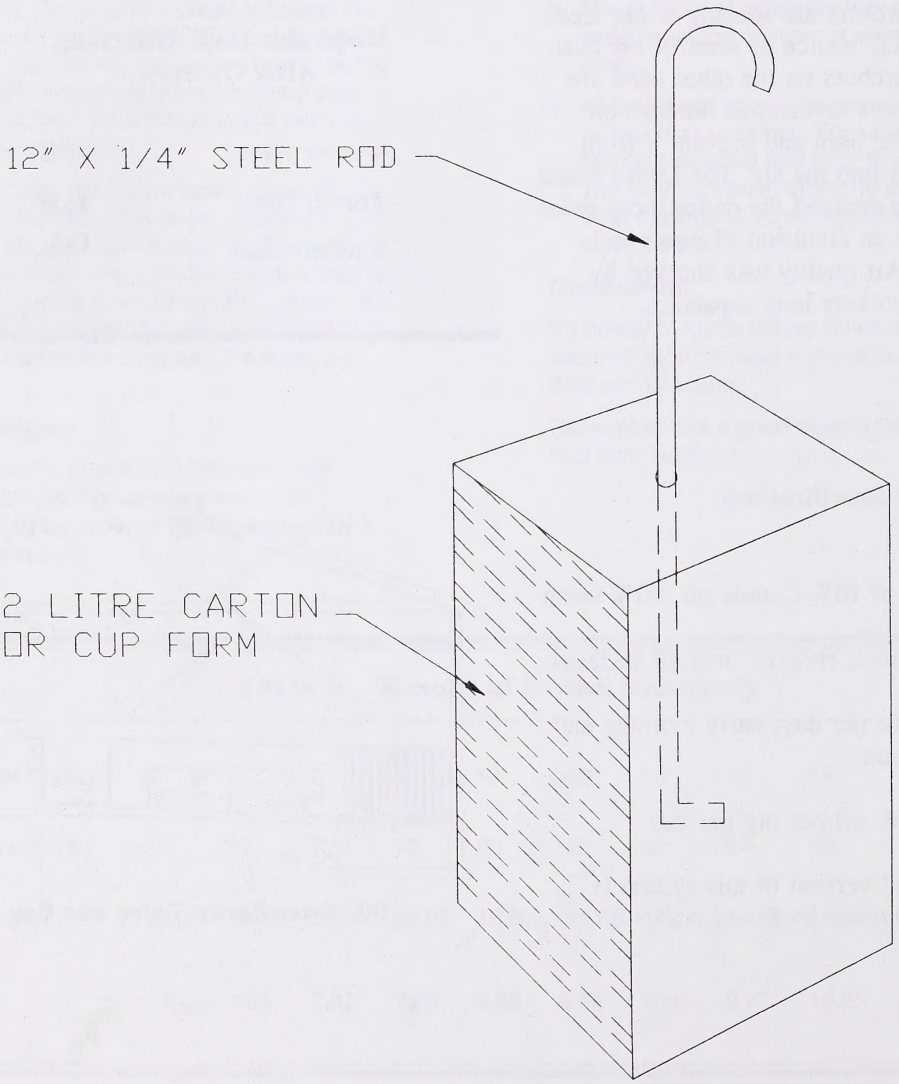
Oil-Water Spray Twice per Day

Hay Tarp Tie-Down Weights

by Wayne Winchell

Using concrete weights on the edges of hay tarps has a number of advantages over string or ropes tied to the bale strings. First, they are very quick to install and remove. Secondly, they keep the tarp tight even as the bales settle. They are easily constructed by bending a 12 inch long piece of 1/4" rod as shown. A 2 litre milk carton (or a 2 litre pop bottle or "slurpy" cup) can be used as "forms". Fill the forms with concrete and insert the rods, leaving about 4" to 6" of rod sticking out of the concrete. The 2 litre size results in a 10 pound weight and appears to be the right size for most tarps. (1 litre or 5 pounds is too light and heavier weights may pull eyelets out of the tarp).

Source: Alvin Dembinski



How to Make More Money With Cattle

by Dale ZoBell

In this world of high technology and advanced science we often overlook basic measures or tools we can employ to become more efficient and realize greater profit. Additional expense is not always necessary but increased awareness and management skills are. The following is a partial list of possibilities to think about. They are intended to stimulate thought and may not be practical or advisable for every situation. If additional information is required on any one point contact your nearest Alberta Agriculture Office.

Cow/calf/yearlings

- Decrease the length of your calving season. Cows not cycling with the main herd are costing you money due to less pounds of calf at sale time. Nutrition can be a major factor. Pay attention to energy and minerals.
- Supplement cattle on pastures as required. Determine limiting nutrients (ie protein, energy, minerals and provide where necessary but only supplement what is required.
- Implant calves and yearlings on grass.
- Utililize ionophores such as Bovatec, Rumensin or Posistac on pasture. This will improve average daily gain and feed efficiency.
- Use fly tags and internal parasite control products only on an as needed basis.
- Keep cow size manageable. Which cow would be most profitable on your farm? Know the costs and returns associated with maintaining various sized cows for a year.
- Rent out your pasture on a cost per pound of gain basis versus AUM based.
- Sell your calves or yearlings when you can realize the greater profit - not when the grass is gone. This may mean selling early or perhaps utilizing creep feeds to increase weights and extend the season.
- Direct sell calves and yearlings thus bypassing the middleman. This will necessitate a strong understand ing of marketing cattle prices, shrink and other factors.
- Pregnancy test cows early - August or September, cull and sell.
- If hay prices are high utilize low quality roughages such as straw. Balance rations accordingly.
- Purchase replacement heifers.
- Bull evaluate.
- Feed test and consult with knowledgeable nutritionists.
- Keep machinery for the cow/calf enterprise to a minimum. Lease machinery that would normally be used very little. Barter with neighbors.

In this world of high technology and advanced science we often overlook basic measures or tools we can employ to become more efficient and realize greater profit.

- Purchase grain versus raising it yourself. It may also pay to purchase hay and maximize profit from pasture.
- Don't overcapitalize on buildings and pens. Use portable calf shelters and visit other farms to see what they have.
- Subscribe to publications targeted to the beef producer. Not every idea will work for you but it's always wise to know as much as you can about your business.
- These are a few ideas and points to consider and we know there are hundreds more, perhaps even more noteworthy than these. Always keep yourself alert to ideas that can improve your situation.

Late Summer Drought Options

by Robert Hand

Dry conditions throughout most of north central Alberta are creating hard decisions for cattle producers. The following comments briefly outline some alternatives which could be done rather than sell off the cow herd.

Wean calves early

Each cow-calf pair on pasture has a total combined weight of at least 1600 pounds. By weaning the calf and providing dry feed, one can reduce the total weight grazing the pasture by about 400 pounds or 25%. In addition the cow's energy and water requirement lessens since she is no longer lactating. A study conducted in Ohio suggests that early weaned calves and their dams were 43% more efficient at converting feed into calf gain than were normally weaned cow-calf pairs. If considering feeding cows on pasture or in dry lot, it will be cheaper to feed weaned calves and cows separately.

Calves can be weaned at 3 months of age or older with few problems providing a balanced ration is fed. A 300 pound calf consuming 4 pounds of grain, 7 pounds of hay or 15 pounds of silage and depending on forage quality 1 pound of commercial protein supplement will gain about 2 pounds per day.

Graze cereal crops

Grazing barley or oat crops can alleviate pasture shortages. However, if water and fencing are non-existent, consider using portable electric fencing around the perimeter of the field, to the water source and to control grazing within the field. It is relatively cheap, easy to build and can be moved later. Cereal crops are good sources of energy and protein, but two problems to check out are:

- If the crop is barley and is a rough awned variety, cattle will likely get sores or infections in their mouths. Avoid grazing or feeding rough awned varieties.

- Stressed cereal crops can have high nitrate levels. Have the crop checked for nitrates. Alternatively, introduce the cattle slowly to the cereal crop. If given three to four days of adjustment, the microbes in the cattle's rumen change to accommodate higher nitrate feeds.

Sort and sell cull cows early

Reducing cow numbers can extend the available pasture. Since these cows would be culled anyway, why not sell them in August rather than October. Prices will likely be $4.00 to $5.00 per cwt higher in August so selling 10 cull cows now may yield equivalent dollar return to 11 cows sold in October or November.

Creep feed calves

Creep feeding can be an effective method of extending pasture and ensuring weaning weights are maintained. Creep fed calves can gain from 5 to 100 extra pounds compared to non creep fed calves. At a feed conversion of 6 pounds of creep feed to one pound of gain, a calf consuming 4 pounds of an energy creep feed per day for 75 days would gain an extra 50 pounds. If the creep cost $120/tonne, calf prices are $1.00 per pound with a $5.00/cwt price slide, there would be a return of $20.00 per head to labor, management and facilities for creep feeding.

Supplemental feed on pasture

Either hay or grain can be fed on pasture. Rolled or ground barley is a cheaper source of energy than energy from hay. For example, $1.50 per bushel barley has an energy cost of 2.1 cents per Mcal of energy. Energy in $50.00 per ton hay costs 2.4 cents per Mcal of energy. Feeding 5 pounds of barley provides the same amount of energy as 7 pounds of mixed hay. At the above prices, the barley would cost $15.60 per 100 cows per day compared to $17.50 for the hay. Depending on pasture available and how much you want to extend the pasture, cows could be fed up to 12 pounds of barley per day if fed in two feedings. It would be a more efficient use of the feed if the calves were weaned so that cows and calves were fed separately.